









Digitized by the Internet Archive  
in 2011 with funding from  
Boston Library Consortium Member Libraries

<http://www.archive.org/details/bulletin1976univ>









UNIVERSITY OF MASSACHUSETTS

BULLETIN

1976-1977

General Information Bulletin, Amherst, 1976-1977

Undergraduate Course and Faculty Directory, Amherst, 1976-1977

Graduate Bulletin, Amherst, 1976-1977

Summersession, Amherst, 1976

Continuing Education, Amherst, Fall 1976

Continuing Education, Amherst, Wintersession, 1977

Continuing Education, Amherst, Spring 1977

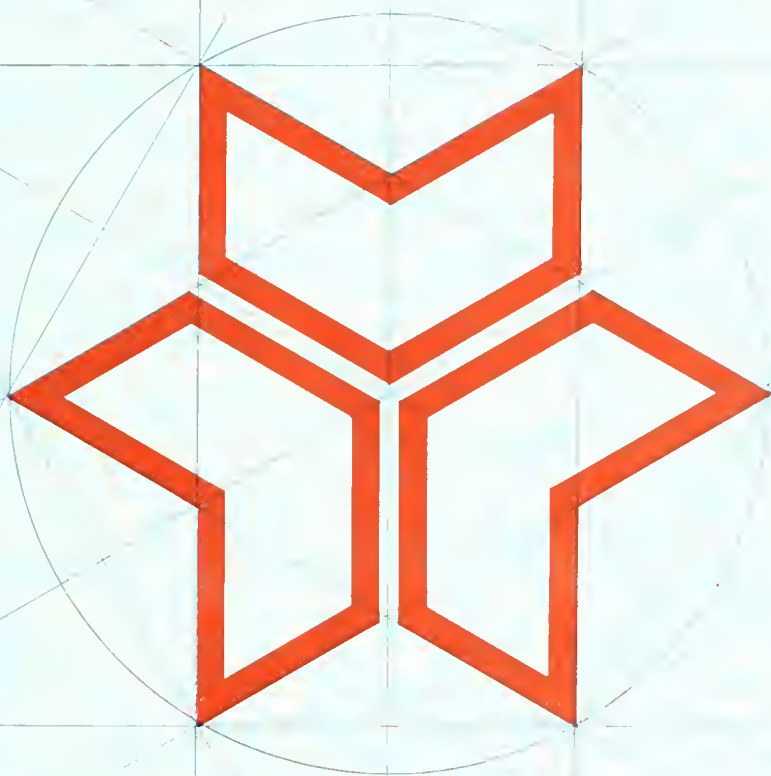
Course Listing, Boston, 1976-1977





# General Information Bulletin 1976-1977

University of Massachusetts at Amherst



The Undergraduate Catalog of the University of Massachusetts at Amherst consists of the Course and Faculty Directory and the General Information Bulletin. All students are responsible for observing the rules and regulations thus published, as well as those published in University Directions. The University reserves, for itself and its departments, the right to change its announcements or regulations whenever such action is deemed appropriate or necessary.  
APRIL 1976

The University Undergraduate Catalog for the 1976-77 academic year is part of the One Hundred and Eleventh Annual Report of the University of Massachusetts and as such is Part II of Public Document 31, Section 8, Chapter 75, of the General Laws of Massachusetts.

The University of Massachusetts at Amherst prohibits discrimination on the basis of race, color, sex, age, religion, national origin or handicap in any aspect of its employment, the recruitment, admission and treatment of students and in its policies and programs, as required by Federal and State laws and regulations. Inquiries concerning these laws and regulations or their application should be addressed to the Office of the Affirmative Action Coordinators, 375 Whitmore Administration Building.

## The Board of Trustees

### Organization of 1976

Robert M. Abrams of Holyoke  
Stephen G. Breyer of Cambridge  
Sylvia K. Burack of Brookline  
Bruce R. Carlson of Dallas, Texas  
Catherine Forbes Clark of Boston  
Theresa Conti of Boston  
Edmund J. Croce of Worcester  
Paul M. Cronin of Boston  
Daniel Dennis of Billerica  
Robert D. Gordon of Boston  
Joseph P. Healey of Arlington  
Ogretta V. McNeil of Worcester  
Ruth S. Morgenthau of Cambridge  
Gavin D. Robertson of Worcester  
Carolyn C. Rowland of Boston  
Alan Shaler of Easthampton  
Erline Shearer of Dorchester  
Robert J. Spiller of Winchester  
Frederick S. Troy of Boston

### Ex Officio

Michael S. Dukakis of Brookline,  
Governor of the Commonwealth  
Robert Wood of Lincoln,  
President of the University  
Gregory R. Anrig of Needham,  
Commissioner of Education  
Jonathan E. Fielding of Brookline  
Commissioner of Public Health  
Robert L. Okin of Cambridge,  
Commissioner of Mental Health  
Frederic Winthrop, Jr. of Ipswich,  
Commissioner of Agriculture  
Nancy B. Eddy of Amherst, Chairman,  
Board of Selectmen

### Officers of the Board

Joseph P. Healey of Arlington,  
Chairman  
Gladys Keith Hardy of Newton,  
Secretary  
Kenneth W. Johnson of Amherst,  
Treasurer  
Dorothy K. Eichel of Boston,  
Assistant Secretary

## **A Message from the Chancellor**

I am pleased that you are considering attending the University of Massachusetts at Amherst. Now in its second century of education, research and service, this publicly-supported University offers programs of excellence and diversity to the broadest possible cross-section of the citizens of this Commonwealth, to whom it remains both responsible and responsive.

Through the University's rich combination of human expertise and material resources, its students have unique opportunities to prove themselves and their concepts, and to shape and extend their capacities for knowing and caring.

I welcome student participation in and contribution to this institution's intellectual governance and growth. In the long run, experience has shown that it is student energy, commitment and questioning which most surely shape the University's future successes.

Randolph W. Bromery  
*Chancellor*

## Academic Calendar

### 1976

|                                                       |      |       |    |
|-------------------------------------------------------|------|-------|----|
| Registration Day-Undergraduate, Graduate, Stockbridge | Wed. | Sept. | 1  |
| First day of classes                                  | Thu. | Sept. | 2  |
| Holiday                                               | Mon. | Sept. | 6  |
| Monday Class Schedule will be followed                | Wed. | Sept. | 8  |
| Holiday                                               | Mon. | Oct.  | 11 |
| Holiday                                               | Thu. | Nov.  | 11 |
| Counselling period begins (classes not suspended)     | Mon. | Nov.  | 15 |
| Thursday class schedule will be followed              | Tue. | Nov.  | 16 |
| Counselling period ends                               | Sat. | Nov.  | 20 |
| Thanksgiving recess begins after last class           | Wed. | Nov.  | 24 |
| Classes resume                                        | Mon. | Nov.  | 29 |
| Last day of classes                                   | Wed. | Dec.  | 15 |
| Final examinations begin                              | Thu. | Dec.  | 16 |
| Last day of final examinations, semester ends         | Wed. | Dec.  | 22 |

### 1977

|                                                       |      |      |    |
|-------------------------------------------------------|------|------|----|
| Registration Day-Undergraduate, Graduate, Stockbridge | Mon. | Jan. | 24 |
| First day of classes                                  | Tue. | Jan. | 25 |
| Holiday                                               | Mon. | Feb. | 21 |
| Monday class schedule will be followed                | Tue. | Feb. | 22 |
| Spring vacation begins after last class               | Sat. | Mar. | 19 |
| Classes resume                                        | Mon. | Mar. | 28 |
| Holiday                                               | Mon. | Apr. | 18 |
| Monday class schedule will be followed                | Wed. | Apr. | 20 |
| Counselling period begins (classes not suspended)     | Mon. | Apr. | 25 |
| Counselling period ends                               | Sat. | Apr. | 30 |
| Last day of classes                                   | Wed. | May  | 11 |
| Final examinations begin                              | Thu. | May  | 12 |
| Last day of final examinations, semester ends         | Wed. | May  | 18 |
| Commencement                                          | Sat. | May  | 21 |

#### Associated Dates:

Rosh Hashanah Sept. 25-26; Yom Kippur Oct. 4; Easter April 10.



# Academic Calendar

## 1977

|                                                       |      |       |    |
|-------------------------------------------------------|------|-------|----|
| Registration Day-Undergraduate, Graduate, Stockbridge | Wed. | Aug.  | 31 |
| First day of classes                                  | Thu. | Sept. | 1  |
| Holiday                                               | Mon. | Sept. | 5  |
| Monday class schedule will be followed                | Wed. | Sept. | 7  |
| Holiday                                               | Mon. | Oct.  | 10 |
| Holiday                                               | Fri. | Nov.  | 11 |
| Counselling period begins (classes not suspended)     | Mon. | Nov.  | 14 |
| Friday class schedule will be followed                | Tue. | Nov.  | 15 |
| Counselling period ends                               | Sat. | Nov.  | 19 |
| Thanksgiving recess begins after last class           | Wed. | Nov.  | 23 |
| Classes resume                                        | Mon. | Nov.  | 28 |
| Last day of classes                                   | Wed. | Dec.  | 14 |
| Final examinations begin                              | Thu. | Dec.  | 15 |
| Last day of final examinations, semester ends         | Wed. | Dec.  | 21 |

## 1978

|                                                       |      |      |    |
|-------------------------------------------------------|------|------|----|
| Registration Day-Undergraduate, Graduate, Stockbridge | Mon. | Jan. | 23 |
| First day of classes                                  | Tue. | Jan. | 24 |
| Holiday                                               | Mon. | Feb. | 20 |
| Monday class schedule will be followed                | Tue. | Feb. | 21 |
| Spring vacation begins after last class               | Sat. | Mar. | 18 |
| Classes resume                                        | Mon. | Mar. | 27 |
| Holiday                                               | Mon. | Apr. | 17 |
| Monday class schedule will be followed                | Wed. | Apr. | 19 |
| Counselling period begins (classes not suspended)     | Mon. | Apr. | 24 |
| Counselling period ends                               | Sat. | Apr. | 29 |
| Last day of classes                                   | Wed. | May  | 10 |
| Final examinations begin                              | Thu. | May  | 11 |
| Last day of final examinations, semester ends         | Wed. | May  | 17 |
| Commencement                                          | Sat. | May  | 20 |

Associated Dates:  
Rosh Hashanah Sept. 13-14; Yom Kippur Sept. 22; Easter March 26

## Table of Contents

|                                       |    |                                               |    |
|---------------------------------------|----|-----------------------------------------------|----|
| <b>GENERAL INFORMATION</b> .....      | 1  | <b>SPECIAL ACADEMIC PROGRAMS</b> ...          | 23 |
| <b>ADMISSIONS</b> .....               | 1  | Bachelor's Degree with Individual             |    |
| Freshman .....                        | 1  | Concentration .....                           | 23 |
| When to File .....                    | 1  | Colloquia .....                               | 23 |
| Deadlines etc. ....                   | 1  | Continuing Education .....                    | 23 |
| Application and Other Fees .....      | 1  | Everywoman's Center .....                     | 23 |
| Required Tests .....                  | 1  | Global Survival Freshman                      |    |
| Optional Tests .....                  | 2  | Year Program .....                            | 23 |
| Entrance Categories .....             | 2  | The University Honors Program .....           | 23 |
| Candidates' Reply Date .....          | 3  | Legal Studies Program .....                   | 24 |
| Interviews .....                      | 3  | Orchard Hill Residential College ....         | 24 |
| Notification of Decision .....        | 3  | The Center for Outreach Programs .            | 24 |
| New England Regional Program .....    | 3  | Overseas Study .....                          | 24 |
| Veterans .....                        | 3  | Project 10 .....                              | 25 |
| Out-of-State Applicants .....         | 3  | Rhetoric .....                                | 25 |
| Handicapped Students .....            | 4  | Southwest Residential College .....           | 25 |
| Fields of Study Not Offered .....     | 4  | Summer Session .....                          | 25 |
| Freshman Orientation .....            | 4  | University Without Walls .....                | 26 |
| Visiting Students .....               | 4  | University Year for ACTION .....              | 26 |
| Preparatory Studies .....             | 4  | Upward Bound .....                            | 26 |
| Minority Student Admission            |    | <b>SCHOOLS, COLLEGES, DEPARTMENTS</b>         |    |
| Programs .....                        | 4  | <b>AND PROGRAMS</b> .....                     | 26 |
| Transfers .....                       | 4  | <b>College of Arts and Sciences</b> .....     | 27 |
| Physical Exam .....                   | 5  | Faculty of Humanities and                     |    |
| <b>RESIDENCE STATUS</b> .....         | 5  | Fine Arts .....                               | 29 |
| <b>FAMILY EDUCATIONAL RIGHTS</b>      |    | Faculty of Natural Sciences                   |    |
| <b>AND PRIVACY ACT</b> .....          | 7  | and Mathematics .....                         | 34 |
| <b>ACADEMIC REGULATIONS</b> .....     | 9  | Faculty of Social and                         |    |
| Classification of Students .....      | 9  | Behavioral Sciences .....                     | 40 |
| Graduation Requirements .....         | 10 | Interdisciplinary Programs .....              | 42 |
| <b>HOUSING</b> .....                  | 10 | <b>School of Business Administration</b> .... | 46 |
| Policy .....                          | 10 | <b>School of Education</b> .....              | 46 |
| Exemptions .....                      | 10 | <b>School of Engineering</b> .....            | 48 |
| Room Assignments etc. ....            | 11 | <b>College of Food and</b>                    |    |
| <b>EXPENSES</b> .....                 | 12 | Natural Resources .....                       | 49 |
| <b>STUDENT PERSONNEL SERVICES</b> ... | 14 | <b>School of Health Sciences</b> .....        | 53 |
| <b>HEALTH SERVICES</b> .....          | 15 | <b>School of Physical Education</b> .....     | 55 |
| <b>STUDENT ACTIVITIES</b> .....       | 16 | <b>Division of Military and</b>               |    |
| <b>FINANCIAL AID</b> .....            | 20 | Air Science .....                             | 56 |
| <b>GENERAL SERVICES</b> .....         | 21 | <b>Graduate School</b> .....                  | 58 |
|                                       |    | <b>ADMINISTRATIVE OFFICERS</b> .....          | 59 |

## General Information

The University of Massachusetts is the state university of the Commonwealth, founded under provisions of the 1862 Morrill Land Grant Act. Incorporated as Massachusetts Agricultural College in 1863, the institution became Massachusetts State College in 1931, and the University of Massachusetts in 1947. Rooted in the liberal arts tradition, the institution has grown steadily from four buildings at its opening in 1867 to the present state university system of three major campuses.

Situated in the Connecticut River Valley, the Amherst campus consists of approximately 1,200 acres of land and 150 buildings.

The University of Massachusetts at Boston was opened in 1965. The University's Medical School at Worcester, founded in 1962 by an Act of the Legislature, enrolled its first class in 1970.

The total resources of the University are dedicated to giving all qualified students full opportunities to develop their capabilities.

## Admissions

### Freshman

Applications for admission to the Amherst campus may be obtained from the Admissions Office. Applications for the Boston campus may be obtained from the Admissions Office in Boston. See the final page of this Bulletin for addresses. If you were or are enrolled as a full-time post-secondary student, you must apply as a Transfer student.

### How to File

Fill out the application carefully, answering all questions. Submit it to your Guidance Counselor who will complete and forward it to the University with a transcript of your grades. Do not mail the application directly to us yourself. (Older students and Veterans are exempt from this provision although they must assume the responsibility for ensuring that an "official transcript" is submitted by stated deadlines.)

### When to File

Applications should not be submitted until the first set of senior year grades are

recorded. Do NOT wait for SATs to be taken and on file, however.

### Deadlines

Applications must be RECEIVED AND COMPLETE (including SATs, transcript, and related documents) not later than:

|            | Fall Semester | Spring Semester |
|------------|---------------|-----------------|
| Mass. Res. | Mar. 1        | Oct. 15         |
| All Others | Feb. 1        | Oct. 15         |

### SAT Test Date Deadline

To be considered for the Fall Semester, SATs must be taken on or before the January test date to ensure that results will be received by the deadline unless wishing to be considered on the basis of Junior year SATs.

### If You Previously Applied for Admission

If you applied for admission to the Amherst campus in the past two years and have not been in full-time enrollment at another college, it is NOT necessary to file a new application. Write and request "Reactivation" of your previous application (by the stated deadline). In your letter, please chronologically detail what you have been doing in the interim.

### Recommendations

Although recommendations are not required, if submitted, we prefer information that will provide us insights into your academic and vocational potential.

### Application and Other Fees

There is a non-refundable Application Fee of \$10 for Massachusetts residents and \$25 for non-residents. A \$15 non-refundable Matriculation Fee is due within 15 days after notification of acceptance. Subsequently, a \$30 non-refundable Summer Counseling (orientation) fee will become due. Further information on costs is available from Financial Aid Services. For the coming academic year, single Massachusetts residents attending the University and living on campus will normally incur costs of \$2800 to \$3000 per year. This includes tuition and fees, room, board, personal expenses, books, and supplies and the fees noted above.

### Required Tests

All applicants are required to submit results of the Scholastic Aptitude Tests

(SATs) administered by the College Entrance Examination Board. Although Achievement Tests are not required of Massachusetts residents, it is strongly recommended that applicants take three, of which one should be English Composition.

College Board Test Reports must be sent directly to the University from the College Board Test Center and should also be included on the high school transcript. Applicants must ensure that they take SATs early enough to meet application deadlines. The University's Amherst campus College Board Number is 3917.

Out of-state students are required to take three Achievement Tests, one of which must be English Composition, in addition to SATs.

Foreign students are required to submit SATs and TOEFL (Test of English as a Foreign Language).

### **Optional Tests**

#### *Advanced Placement*

Advanced placement and credits towards graduation will be awarded to candidates who obtain scores of 4 and 5 on the College Entrance Examination Board Advanced Placement Test; scores of 3 are given credit on a departmental basis. Candidates seeking advanced placement and credit towards graduation in foreign languages and rhetoric are advised to take the CEEB Foreign Language Achievement Test and English Composition, respectively.

The College-Level Examination Program (CLEP) enables students to earn college credit-by-examination. Anyone may take CLEP tests to demonstrate his or her college-level competency no matter when, where, or how this knowledge has been acquired. CLEP tests are administered at more than 500 test centers and are given the third week of each month. Fall Semester applicants should plan to take the exams, if at all, not later than April of the year of entrance. Your high school guidance office will have additional details about CLEP, or you may write to CLEP, Box 592, Princeton, NJ 08540.

#### *Mathematics Requirements*

Prospective physical science or mathematics majors should, if possible, offer two years of algebra, one year of plane geometry, and one-half year of

trigonometry. Preparation in analytic or solid geometry, chemistry, physics, and introductory calculus is also strongly recommended.

Prospective engineering majors should offer two years of algebra, one year of plane geometry, and one-half year each of trigonometry and solid geometry. Chemistry and physics are also advised.

Any student deficient in the mathematics requirements should plan to make it up during the summer prior to entrance or should expect to take five years to complete the college course.

#### *Foreign Language Requirement*

The College of Arts and Sciences stipulates intermediate language proficiency as a graduation requirement. At least three years of secondary school language preparation will be advantageous. Students who receive a score of 600 or higher on a language Achievement Test will gain 6 credits in that language and will be exempt from the language requirement. Students who have completed the fourth level of one language or the third level of one language and the second level of a second language are exempt from the language requirement.

The exceptional candidate whose secondary preparation is not within the framework of the above recommendations may be considered for admission. Suitability for admission will be based on other intellectual aptitudes and achievements and readiness for the University curriculum.

### **Entrance Categories**

Again this year we expect a greater number of qualified applicants to apply than we are able to accept for regular September enrollment. Therefore, we are offering several alternative entrance possibilities to provide maximum admission opportunities.

#### *Regular Entrance*

Freshman applicants accepted for enrollment in September (Fall Semester).

#### *Delayed Entrance*

In recognition that time spent away from school can be valuable to a student in determining educational goals, applicants accepted for September ("Regular Entrance") may request to delay their date of enrollment, with subsequent guarantee of



admission, for six months to two years. If you wish to elect this option, you must do so after you have been notified of acceptance. Further information will be included with acceptance material.

#### **Candidates' Reply Date**

The University participates in the Candidates' Reply Date option which permits an accepted applicant to delay notification of intention to enroll until May 1.

#### **Interviews**

An interview is not part of the admission process since it is impossible to interview all applicants. Personal conferences will be scheduled for applicants who have questions which cannot be resolved by correspondence or printed literature. Please contact the Admissions Office for an appointment.

#### **Visits to the Campus**

We encourage applicants to visit the Amherst campus. Group information sessions are held on Friday afternoons in the Fall beginning in October. The Admissions Office is not open on Saturdays.

#### **Guided Tours**

Through the University Guide Service, ARCON, guided tours are available during the regular academic year, except during University vacations, on weekdays from 1:30 to 3:30 p.m., Saturdays from 10 a.m. to 1 p.m., and Sundays from 1 to 3 p.m. Special arrangements for campus tours during the academic year may be made by writing to ARCON, University Guide Service, Murray D. Lincoln Campus Center, University of Massachusetts, Amherst, MA 01002, or telephoning (413) 545-0012. Tours originate from the Information Desk, concourse level of the Campus Center.

#### **High School Visits**

Within budget limitations each public high school in Massachusetts and some private and parochial schools will be visited between September and mid-November by an Admissions Office staff member.

#### **Notification of Decision**

In most cases Freshman applicants will be notified by mid-April of the action taken on their application for Fall enrollment and by November 1 for Spring enrollment. Those with outstanding academic records

may receive earlier notification. If accepted at an early date, however, you are under no pressure to make a final decision in regard to choice of college before the Candidates' Reply Date.

#### **New England Regional Student Program**

Students who are legal residents of any of the other New England states may be eligible for consideration for admission under auspices of the New England Regional Student Program. The NERSP provides an opportunity to earn a degree in certain curricula not offered at the resident's own state institution at the tuition rate for Massachusetts residents. Check with high school guidance counselor.

#### **Veterans**

Veterans whose Active Duty is credited to Massachusetts, or who subsequent to release have established Massachusetts as their domicile, are high school graduates or equivalent, and who have not attended another college full-time since release from A.D., will be considered for admission primarily on the basis of SATs. Other Veterans will be considered under regular admission policies. If previously enrolled in an institution of higher education, before or after A.D., a transcript of credits attempted and earned MUST be submitted for this application to be considered complete. Credits earned prior to A.D. will not affect enrollment eligibility. Credits earned after A.D., may affect enrollment eligibility.

A DD 214 must be submitted. (If still on A.D., submit copy when available.)

The Veterans' Affairs Office is located in Room 236, Whitmore Administration Building, telephone (413) 545-1346. This office has the most current data regarding laws, policies and procedures for veterans. The Veterans' Affairs Office acts as a liaison between the individual veteran and various governmental agencies (i.e., Veterans' Administration and Veterans' Services). The Veterans' Office has a job bank, a short-term loan fund and other services to aid the veteran.

#### **Out-of-State Applicants**

To accommodate as many qualified legal residents of Massachusetts as possible, the University limits out-of-state undergraduate enrollment to 5%. This makes

freshman admission extremely competitive to non-residents. See Section on "Residence Status." Note also SAT requirements and application deadline.

### Handicapped Students

An office has been established to assist academically qualified students who have physical disabilities. Students, parents, and counselors concerned should contact Office of Handicapped Student Affairs, 227 Whitmore, telephone (413) 545-0892.

### Fields of Study NOT Offered

While the University offers nearly 100 different major fields of study, the following which are commonly requested, are not available: Aeronautical Engineering, Architecture, Business Education, Criminology, Dental Technology, Oceanography, Occupational Therapy, Photography, Physical Therapy, Recreational Therapy, Secretarial Sciences, Special Education. See Catalog for full academic listings.

### Freshman Orientation

Every student entering as a freshman must attend a two-and-one-half-day orientation program at a specified time during the summer prior to entrance. The program consists of academic placement testing, counseling, and pre-registration for courses to be taken during the coming semester and orientation to social and academic opportunities available to undergraduates. Each student is assigned a faculty adviser who will help in the selection of courses and planning of a class schedule. On the final day of each of these periods, a special program is held for parents so that they may learn more about the University. Each freshman attending the summer orientation program on the Amherst campus will pay a non-refundable fee of \$30 to cover the cost of meals, housing, testing, and counseling. (See Transfers section for information on transfer orientation.)

### Visiting Students

The University is not able to accommodate students from another institution who wish to spend only a semester or a year on this campus, except through organized exchange programs. Students who wish to take courses at the University in a visiting capacity are urged to contact the Division of Continuing Education.

### Preparatory Studies

Your secondary school preparation must indicate your capacity to handle the quality of scholastic work which the University has established as its standard of achievement. A prerequisite for admission is the satisfactory completion of a four-year high school course or its equivalent. A minimum of 16 units should be offered, distributed according to the following recommendations:

|                                       |    |
|---------------------------------------|----|
| English .....                         | 4  |
| College preparatory mathematics ..... | 3* |
| Foreign language .....                | 2  |
| U.S. History .....                    | 1  |
| Laboratory science .....              | 1  |

\*Preferably two years of algebra and one of plane geometry.

A minimum of five other units should be offered in the areas of mathematics, science, foreign language, history and social studies, or free electives (not more than four units).

### Minority and Low-Income Student Admission Programs

In cooperation with the Massachusetts Commission Against Discrimination, an Affirmative Action program has been developed to provide information and assistance to minority students in making application for admission.

"Minority" individuals are defined in Presidential Executive Order 11246 as including Afro-American, American Indian, Oriental American, and Spanish-surnamed people.

CCEBS (Committee for the Collegiate Education of Black Students) seeks to recruit and accept minority and low-income white students into the University through a special admissions process. The CCEBS student shares all the responsibilities of any other student but is offered individually focused academic, financial, and personal support services, if needed.

BCEP (Bilingual Collegiate Program) is designed primarily for Spanish-speaking individuals and is similar to the program above.

### Transfers

Any student who has been previously enrolled in an institution of higher education and completed 10 or more semester hours is considered a transfer and must file a



transfer application form. The University considers for transfer only those applicants who have completed a minimum of 54 transferable semester credits. Only in a very limited number of specialized curricula are applicants eligible for consideration with less than 54 credits.

Priority is given to transfer applicants from Massachusetts who have completed two years in a transfer program at any of the Commonwealth's state or city supported community and junior colleges. Remaining transfer vacancies are filled on a competitive basis. Transfer vacancy for the non-resident (out-of-state and foreign) is extremely limited.

A minimum of 45 semester credits must be taken in residence at the University, and all University, college, and major requirements must be completed in order to receive a bachelor's degree.

Applications must be received and complete prior to April 1 for fall semester consideration, and prior to October 15 for spring semester consideration. It is the student's responsibility to be sure that all transcripts from each college attended, including the most current, have been forwarded to the Office of Transfer Affairs before the stated deadline dates. High school record and SAT scores are not required of transfer applicants.

Decisions are made late in the semester prior to proposed entrance. A tentative evaluation of transfer credits is sent to the student shortly after acceptance.

Campus visitations and interviews with the staff of the Office of Transfer Affairs are encouraged if questions or problems arise concerning applications. During certain times in the admissions year, however, personal conferences must be limited to urgent problems.

Every student entering as a transfer is required to attend an orientation and pre-registration session during the summer prior to entrance. At this time a faculty adviser is available to each student to assist in selection of courses. Advanced placement testing also takes place at this time and a general orientation of the social and academic opportunities of the University is provided. Transfer students who enter in the spring semester will pre-register in November. A non-refundable \$15 fee is required of each transfer to cover the costs of this program.

### **Physical Exam**

Physical examination by a personal physician is required of each entering freshman, transfer, re-entering student, and student participating in athletics. Physical report forms for this examination are mailed with acceptance material and must be completed and returned to the University Health Services 10 days before the opening of the semester. Evidence of a successful smallpox vaccination and active tetanus immunization is required.

### **Proof of Residency/ Residence Status**

All applicants must submit a notarized "Proof of Residence" form included with the application for admission prior to consideration. The rules and regulations shall apply to the classification of students at the University of Massachusetts as Massachusetts or non-Massachusetts students for tuition purposes.

#### **Section 1. Definitions**

1) **ACADEMIC PERIOD** — A term or semester in an academic year or a summer session, as prescribed by the Board of Trustees or under their authority.

2) **CONTINUOUS ATTENDANCE** — Enrollment at the University for the normal academic year in each calendar year, or the appropriate portion or portions of such academic year as prescribed by the Board of Trustees or under their authority.

3) **DOMICILE** — A person's true, fixed and permanent home and place of habitation, where he intends to remain permanently or for an indefinite time.

4) **EMANCIPATED PERSON** — A person (a) who has attained the age of 18 years, or (b) if under 18 years of age, whose parents have entirely surrendered the right to the care, custody and earnings of such person and who no longer are under any legal obligation to support or maintain such person, or (c) a person who has no parent. If none of the aforesaid definitions apply, said person shall be deemed an "unemancipated person."

5) **HIS** — Personal pronouns herein shall apply to the female as well as the male gender.

6) **PARENT** — With respect to a person (in the case of an adopted person, inserting the adjective "adoptive" before the

words "father" and "mother" wherever used):

- a) the person's father;
- b) if the person's father dies, either the legal guardian or if no legal guardian is appointed, the person's mother;
- c) if neither the father nor mother is living and no legal guardian is appointed, the person who then stands *in loco parentis* to the person;
- d) if the father and mother are divorced, the person to whom legal custody of the person is awarded;
- e) if the father and mother are divorced, separated or unmarried and legal custody has not been awarded, the father or the mother, as the case may be, with whom the person lives or, if he lives with neither and the father is living, the father.

7) RESIDENCE — A place of habitation.

**Section 2. Rules for Determination of Domicile**

1) Domicile is not acquired by mere physical presence in Massachusetts while the person is carrying on a course of study at the University or while the person is engaged in employment for a specified term unless Massachusetts is otherwise the domicile of the person.

2) Domicile at birth may be changed thereafter, by action of the parent in the case of an unemancipated person or by action of the person himself in the case of an emancipated person.

3) A person claiming Massachusetts as his domicile shall furnish evidence to support such claim. The burden of proof in all cases is upon the person making the claim. The following shall be of probative value, although not necessarily conclusive, in support of a claim of domicile within Massachusetts:

- a) Birth certificate;
- b) Motor vehicle registration and/or operator's license;
- c) Voting or registration for voting;
- d) Certified copies of Federal and State Income Tax returns;
- e) Property ownership;
- f) Continuous physical presence in Massachusetts during periods when not enrolled as a student;
- g) Permanent employment in a position not normally filled by a student;

- h) Reliance on Massachusetts source for financial support;
- i) Former domicile in Massachusetts and maintenance of significant connections therein while absent;
- j) Domicile of parent within Massachusetts.

Evidence submitted in support of an assertion of domicile or of parental relationship shall be in such form as the Treasurer of the University or his designee may require. Copies of official records or documents shall be authenticated by a proper officer. Assertions of fact made other than by an authenticated copy of an official record shall be certified as to accuracy and completeness by the person submitting the same.

**Section 3. Proof of Parental Relationship**

A person asserting that he is an emancipated person shall furnish evidence to support such assertion. Such evidence may include:

- a) Birth certificate or any other legal document that shows place and date of birth;
- b) Legal guardianship papers — court appointment and termination must be submitted;
- c) Statements of the person, his parent(s), guardian(s), or others certifying no financial support;
- d) Certified copies of Federal and State Income Tax returns filed by the person and his parent(s);
- e) Where none of the foregoing can be provided, an affidavit of the emancipated person in explanation thereof and stating fully the grounds supporting the claim of emancipation.

**Section 4. Rules for Classification**

1) Every emancipated person applying for admission to the University who has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the date of his application and has established a domicile in Massachusetts shall be eligible for classification as a Massachusetts student for tuition purposes.

2) Every unemancipated person applying for admission to the University, whose

parent has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the date of application and has established a domicile in Massachusetts, shall be eligible for classification as a Massachusetts student for tuition purposes.

3) Every emancipated person seeking a change in classification who has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the beginning date of the academic period for which he registers and has established a domicile in Massachusetts shall be eligible for classification as a Massachusetts student for tuition purposes for such academic period.

4) Every unemancipated person seeking a change in classification, whose parent has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the beginning date of the academic period for which the person registers and has established a domicile in Massachusetts, shall be eligible for classification as a Massachusetts student for tuition purposes for such academic period.

5) A person having his domicile elsewhere than in Massachusetts shall not be eligible for classification as a Massachusetts student for tuition purposes except as herein provided.

6) Any person who is registered at the University as a Massachusetts student shall be eligible for continued classification as a Massachusetts student for tuition purposes (until attainment of the degree for which he is then enrolled) during continuous attendance at such institution.

7) A member of the Armed Forces of the United States and his spouse and unemancipated children shall, while he is on active duty and stationed in the Commonwealth of Massachusetts, be eligible for classification as Massachusetts students for tuition purposes.

#### **Section 5. Change in Classification**

No application for change to classification as a Massachusetts student for tuition purposes submitted later than the first day of classes shall affect a classification during the then current academic period.

#### **Section 6. Penalty for Misrepresentations**

Misrepresentation in or omission from any evidence submitted of any fact which if correctly or completely stated would be grounds to deny classification as a Massachusetts student for tuition purposes shall be cause for exclusion or expulsion from or other disciplinary action by the University.

#### **Section 7. Appeals**

Appeal from a determination denying classification as a Massachusetts student shall be initiated by filing a written request with the Treasurer of the University or his designee specifying the particular grounds for said request.

#### **Section 8. Miscellaneous**

Nothing contained herein shall be construed as limiting or prohibiting the authority of the Board of Trustees to waive or reduce tuition charges.

## **Family Educational Rights and Privacy Act**

### **Policy and Procedures**

A. On January 1, 1975, President Ford signed into law the Family Educational Rights and Privacy Act (Public Law 93-380). This law was developed to allow present or former students, at educational institutions access to educational records kept on them, as well as basic protections of privacy of their records. The law does not apply to applicants seeking admission to the University. The law applies to "educational records" defined as "records, files, documents, and other materials which ... contain information directly related to a student" and "are maintained by an educational agency or institution." The law specifically exempts personal records kept by instructional supervisory, and administrative staff, as long as those records are not accessible or revealed to any other person except a substitute; records of a law enforcement unit; records of employees of an educational institution; and records which are created or maintained by a physician, psychiatrist, psychologist, or other recognized professional or paraprofessional, and which are created, maintained or used only in con-



nection with the treatment of the student.

The law specifically grants the following rights to access:

1. The right to be provided a list of the types of educational records which are maintained by the institution and which directly relate to students;
2. The right to inspect and review the content of those records;
3. The right to obtain copies of those records, which may be at the expense of the student (but not to exceed the actual cost to the educational institution of reproducing such copies);
4. The right to a response from the institution to a reasonable request for explanations and interpretations of those records;
5. The right to an opportunity for a hearing to challenge the content of those records;
6. If the educational record of a student includes information on more than one student, the right to inspect or review only that part of the material or document which relates to such student.

B. The University develops and maintains several types and varieties of educational records on students. A list of what types of records are maintained by the University, where they are kept, what University official has major responsibility for those records, who has access to those records and why, and what it will cost to obtain a copy of those records, has been developed. A copy of the complete list is available for inspection in the following locations:

Admissions Office  
Whitmore Administration Building  
Financial Aid Office  
Whitmore Administration Building  
Dean of Students Office  
Whitmore Administration Building  
Vice Chancellor for Student Affairs  
Office  
Whitmore Administration Building  
Vice Chancellor for Academic Affairs  
Office  
Whitmore Administration Building  
Undergraduate Registrar  
Whitmore Administration Building  
Graduate Registrar  
Graduate Research Center

Continuing Education Registrar  
Hills North  
Student Development Center  
Berkshire House  
Southwest Area Director's Office  
J. Q. Adams Lobby  
Central Area Director's Office  
Hills North  
Orchard Hill Area Director's Office  
Grayson House  
Northeast Area Director's Office  
Leach House  
Sylvan Area Director's Office  
Cashin House  
Ombudsman's Office  
Campus Center  
Legal Services Office  
Campus Center  
Student Senate Office  
Student Union  
Library, Reference Desk  
Main Floor, Library  
B.D.I.C.  
Goodell Building  
University Without Walls  
Wysocki House  
University Year for Action  
Arnold House  
CCEBS Office  
New Africa House  
Center for Outreach Programs  
Goodell Building  
College of Arts and Sciences  
Machmer Hall  
Education, Dean's Office  
Hills South  
Food and Natural Resources,  
Dean's Office  
Stockbridge Hall  
Humanities and Fine Arts,  
Dean's Office  
South College  
Natural Sciences and Mathematics,  
Dean's Office  
South College  
Social and Behavioral Sciences,  
Dean's Office  
South College

Business Administration,

Dean's Office

School of Business Administration

Family Educational Rights and Privacy Act guidelines are summarized annually in the University's *Undergraduate Course and Faculty Directory*, which includes information on access to student records, review of such records, challenging their content, hearing and appeal procedures, directory and public information, and other rights and requirements of the legislation. This information is also available at any of the locations listed above.

## Academic Regulations

The University's official "Undergraduate Academic Regulations" are updated and published each term in the *Schedule of Courses* distributed to every student prior to pre-registration. All students are expected to obtain a copy of these regulations and familiarize themselves with the content, since failure to be aware of a provision does not excuse a student from adhering to it. On the other hand, whenever a student feels that some special circumstance warrants an exception to a regulation, that student is encouraged to discuss the situation with his or her academic dean who can help the student work out an alternative.

Some of the more important aspects of the "Undergraduate Academic Regulations" are summarized below and are treated in more detail in the annual *Course and Faculty Directory*.

### Classification of Students

Undergraduates may enroll in one of five categories:

1) **FULL-TIME STUDENTS.** Candidates for a degree, normally designated as a member of a particular graduating class, carrying the minimum load of 12 or more credits each semester.

2) **REDUCED-LOAD STUDENTS.** Permission of the academic dean is required for exemption from the minimum load requirements. The appropriate semester and cumulative quality point requirements for retention still apply and the semester counts as one of the 10 towards graduation.

3) **PART-TIME DEGREE STUDENTS.** The category "Part-Time" is an original admissions category and is not designed as a category into which full-time students may revert for purposes of part-time study. All academic regulations and standards for full-time students, including a 2.0 cumulative average, apply, with the acceptance of the requirement to complete 12 credits per semester to retain good standing and the rule limiting students to 10 semesters in residence. There are two categories of part-time students: Non-classified and special students.

a) **Non-Classified:** Students admitted as candidates for a degree. These students are billed by the credit, with other fees assessed as appropriate.

b) **Special Students:** Limited to University employees, others affiliated with the University and selected others (such as Amherst Regional High School seniors on request).

4) **SECOND-MAJOR STUDENTS.** A student may earn a second major and have it recorded on the permanent record provided that:

a) The second major is completed within the 10 semesters allowed for the completion of all graduation requirements, including the first or declared major;

b) A student files with the Registrar a formal certification from an authorized representative of the second major that all requirements for that second major have been completed;

c) The second major lies in the same school or college as the first or declared major, or, the student obtains formal certification from the academic dean of the second college that all requirements for graduation from that college have been satisfied.

5) **SECOND-BACHELOR'S-DEGREE STUDENTS.** Students may apply for Second-Bachelor's-Degree status in one of the following two categories:

a) Students and graduates of this University who wish to earn a second bachelor's degree must complete a minimum of 30 additional credits, all of which must be in residence (i.e., students who want to work for two bachelor's degrees simultaneously



do not have to complete one and then start the other anew).

- b) Graduates of other institutions who wish to earn a second bachelor's degree at this University must complete a minimum of 45 credits in residence at the University.

Second-Bachelor's-Degree students must apply through the admissions Office and must obtain, prior to acceptance, the support of an authorized representative of a department and an academic dean in the school or college of the proposed second degree;

In order to validate the second bachelor's degree and have it recorded on the permanent record and diploma, a student must obtain a formal certification from an authorized representative of the second major, and a formal certification from the academic dean of the school or college awarding the second bachelor's degree.

#### **Graduation Requirements**

In order to be considered for a baccalaureate degree, a student must successfully attain or complete:

- 1) A minimum of 120 credits, at least 45 of which must be earned in residence. In addition, students must complete their final year in residence.
- 2) A cumulative average of at least C (2.0). The official grading system runs from A (4.0) through F (0.0) and includes such options as Incompletes, Withdrawal, Audits, and Passes. A Pass/Fail option exists.
- 3) A major, constituting intensive or specialized work in a particular department, division, school, or college and consisting of at least 15 semester hours of credit in junior-senior courses in the area of study. The University offers some 100 majors.
- 4) Core or distribution requirements, providing breadth to complement the depth of a major. At least a minimal familiarity with the theory and practice of writing and speaking, and an introduction to the humanities and fine arts, the social and behavioral sciences, and mathematics and the natural sciences.

Various special programs, such as BDIC, University Without Walls, the Honors Program, the Inquiry Program, and Con-

tinuing Education offer special variations of the graduation requirements. The Honors Program in particular offers a number of options to students, including the Commonwealth Scholar Program, for students who wish to have their transcripts identify them as Honors students, the Departmental Honors Program for students who wish to obtain an honors citation from their major department, and Graduation with Distinction for students whose cumulative average and other attainments merit one of the various *cum laude* citations.

## **Housing**

### **Policy**

Recognizing the educational advantages of both classroom instruction and extracurricular experiences, and the great extent to which residence-hall living can contribute, the Board of Trustees of the University has adopted a policy which requires undergraduates to be housed in University residence halls.

### **Exemptions**

Exempt from this policy are married students; seniors; veterans; members of fraternities and sororities who have been authorized to reside in their respective houses (within approved maximum capacities); and students who commute from the homes of their parents (within a 40-mile radius of Amherst).

A student living in a University residence who seeks permission to live off campus should submit the request to the appropriate Area Director. All others should submit similar requests to the Housing Office before appearing on campus for registration. Very few exemptions of this type are granted yearly.

### **Room Assignments**

Residence halls are opened on the day before registration. Upperclass students have the opportunity to select rooms in the spring of the preceding year. Rooms are assigned in order of receipt of proper application. Notification of assignment is made in mid-August.

### **Housing Plans**

The University offers three basic living arrangements: "Traditional" residence halls, residential colleges, and suite- or

apartment-style residence halls. All three offer opportunities for intellectual, cultural, and social activities, and all three include some coeducational units.

The Central and Northeast Residence Areas consist of 21 residence halls housing 4,000 students. A "traditional" residence hall is a house with a long-standing tradition of fellowship, unity, and loyalty, providing opportunity for meaningful friendship in a relaxed atmosphere.

The Orchard Hill Residential College, housing approximately 1,300 students in four coeducational residence halls, represents a conscious attempt to make these residences more private, more quiet, and more academic in tone.

The Southwest Residential College, which houses 5,500 students in both high-rise and low-rise buildings, operates on the assumption that a "college" within a university may function to provide more effective small-group identities and a maximum of contact between the students and members of the faculty.

Special sections of selected courses are designated for residents of both residential colleges. Music and dramatic events, special lectures, and discussions take place in residence halls.

The Sylvan Residence Area offers suite-type dormitories, affording students an opportunity to build close living relationships within small groups by sharing quarters in a suite- or apartment-style arrangement.

#### **Room Furnishings**

Most residence hall rooms are provided with beds, mattresses and mattress covers, dressers, desks, desk chairs, closets, and mirrors. In addition, most residence halls have study lounges, kitchenettes, laundry facilities, and vending machines.

Each student is expected to provide pillow, linen, and blankets.

Most residence halls are equipped with room telephones. Students who choose to live in these residence halls are charged an additional fee per semester for the basic telephone service.

#### **Residence Hall Staff**

##### **AREA DIRECTORS**

Each residence area is administered by an Area Director, to whom all staff personnel in a residence hall report; Area Directors,

in turn, report to the Director of Residential Life. Area Directors plan and direct all student personnel administrative activities for the residence halls in a given campus residential area; supervise the professional staff and student assistants in the residence halls; advise elected officers and committee chairpersons in the residence halls; and provide individual and group advising.

##### **HEADS OF RESIDENCE**

The Heads of Residence are responsible to the Area Directors. They work jointly with the counselors and Area Directors in the operation of residence halls. They provide leadership and support to the residence hall student staff, facilitate the work of elected house government officers and committee chairpersons, serving as resource persons and discussing University expectations with them and provide individual and group advisement.

##### **COUNSELORS**

Counselors receive direct supervision from the Heads of Residence and general supervision from the Area Directors. Their duties include helping to establish a climate in which students feel free to seek assistance and in which the educational goals of the University are emphasized; counseling individual students in personal, social, and academic matters; working jointly with the Heads of Residence and house government in providing for the daily operation of the residence halls; interpreting and maintaining regulations with respect to student life on campus; and assisting the Heads of Residence.

##### **Room Rent**

Residence halls are constructed, equipped, and maintained, at no cost to the taxpayers, through funding provided by bonds issued by the University of Massachusetts Building Authority. Room rents are fixed so as to provide a fund sufficient to pay building and operating costs, i.e., to amortize the bonds. This requires that a student be held financially responsible for room rent once registering for and occupying a room in a residence hall.

##### **Apartments for Married Students**

The University of Massachusetts owns and manages 395 apartments for married students in three apartment complexes: Lincoln (105 units), University (50 units),

and North Village (240 units), all unfurnished except for appliances (stove and refrigerator). Utilities are included with the rent. Assignment of apartments is made through application (earliest application date given first consideration) or according to circumstances with regard to the number of current vacancies. A tenant is expected upon commencement of the lease (one year) to pay a security deposit equal to one month's rent. Applications and specific information may be obtained from the Married Student Housing Office, Whitmore Administration Building.

#### Off-Campus Housing

A card file of off-campus house, apartment, and room rentals is maintained by the Off-Campus Housing Office. Also provided is information about local realtors, garden apartment developments, classified newspaper rentals, and persons seeking roommates. Every effort is made to assist students to obtain off-campus housing; however, a personal visit is usually necessary for the student to review rental listings because of daily changes and because all off-campus arrangements must be made by the parties involved. Brochures and other information may be obtained from the Off-Campus Housing Office, Munson Hall.

#### Insurance

It is not possible for the University to carry insurance which will compensate students or their families for losses suffered on the campus due to such hazards as fire, theft, or water damage.

#### Food Services

The University Food Services cater the food requirements of the University, except those services offered by the Campus Center Complex. Four dining commons serve students on a five- or seven-day meal ticket contract. All freshmen, sophomores, and juniors residing in University residence halls are required to purchase a meal ticket. Either a 10-, 15-, or 19-meal ticket, which is valid for either two or three meals per day, may be selected. Students who are members of fraternities or sororities may be permitted to board at their respective fraternities or sororities, upon receiving written authorization from the Director of Greek Affairs. Those not required to board on campus may eat at a

dining commons on a cash basis; they may purchase one of the regular meal tickets, or they may purchase a five-day single-meal ticket at a lower rate. Snack bar services are available at Worcester Commons and Hampden Dining Commons during regular hours of operation.

## Expenses

### Amherst Campus

Expenses are approximately \$2300 per year for the normally economical student. First-year costs are usually greater than those of the other three years, and there are fewer opportunities for earnings. Therefore, a student is advised to have a definite plan for meeting the expenses of the first year before entering. The following estimate of a year's expenses, based chiefly upon last year's costs, includes only those items which are strictly University-related and does not include amounts for clothing, laundry, travel, etc. These costs vary slightly from year to year. Tuition for residents of Massachusetts is \$345 per year; for others, \$1550.00. The University reserves the right to change any fees without advance notice.

### ESTIMATED ANNUAL EXPENSES — AMHERST (Undergraduate)

|                                                                          |           |
|--------------------------------------------------------------------------|-----------|
| Tuition (Residents of Massachusetts) .....                               | \$345.00* |
| Room Rent in University Residence Halls (Approx) ...                     | 705.00    |
| Telephone (Where Available) .....                                        | 47.00     |
| Board at University Dining Halls (Five-Day Plan — Approx) .....          | 736.00    |
| Athletic Fee .....                                                       | 30.00     |
| Physical Education Fee .....                                             | 20.00     |
| Campus Center Fee .....                                                  | 64.00     |
| Fine Arts Fee .....                                                      | 6.00      |
| Student Activities Tax (Approx) .....                                    | 58.00     |
| Student Health Service Fee ...                                           | 92.00     |
| Student Medical/Surgical Insurance 12 Months' Coverage — Optional) ..... | 53.00     |
| Books, Stationery, Laboratory and Other Supplies (Approx) .....          | 200.00    |

\*1977-78 \$480.50 — Mass Residence  
\$1550 — All Others

**\$2,356.00**



## INITIAL PAYMENT FOR FRESHMEN

|                                                                                 |            |
|---------------------------------------------------------------------------------|------------|
| Tuition (Residents of<br>Massachusetts) .....                                   | \$ 161.00* |
| Room Rent in University<br>Residence Halls (Approx) ...                         | 352.50     |
| Telephone (Where<br>Available) .....                                            | 23.50      |
| Board at University Dining<br>Halls (Five-Day Plan —<br>Approx) .....           | 368.00     |
| Athletic Fee .....                                                              | 15.00      |
| Physical Education Fee .....                                                    | 10.00      |
| Campus Center Fee .....                                                         | 32.00      |
| Fine Arts Fee .....                                                             | 3.00       |
| Student Activities Tax<br>(Approx) .....                                        | 29.00      |
| Student Health Service Fee ...                                                  | 46.00      |
| Student Medical/Surgical<br>Insurance (12 Months'<br>Coverage — Optional) ..... | 53.00      |
| Books, Stationery,<br>Laboratory and Other<br>Supplies (Approx) .....           | 100.00     |
|                                                                                 | <hr/>      |
|                                                                                 | \$1,193.00 |

\*1977-78 \$218 — Mass Residence  
\$775 — All Others

## Explanation of Fees and Payments

### IN-STATE TUITION

As a state institution, the University offers the privilege of in-state tuition to all students entering from the Commonwealth. Eligibility for admission under the low residential rate is detailed under "Residence Status."

### ATHLETIC FEE

To support comprehensive men's and women's intercollegiate programs as well as intramural programs.

### PHYSICAL EDUCATION FEE

To support the required physical education program, intramural athletics, and general recreation.

### CAMPUS CENTER FEE

To support the Student Union and the Campus Center and meet the operating costs of their various activities.

### FINE ARTS FEE

To support a varied and comprehensive program of fine arts events for the cultural enrichment and enjoyment of the undergraduate body.

### STUDENT ACTIVITIES TAX

Supports student government and an extensive and varied range of cultural and social activities for students. In addition,

payment entitles each student to admission to many campus events and includes a subscription to the daily student newspaper, the annual yearbook, the student handbook, and a student guide to the campus.

### HEALTH SERVICES FEE

To support the medical, phychiatric, and health services provided by the staff of the Health Center.

### MEDICAL/SURGICAL INSURANCE

This is an optional plan intended to supplement the care received by students at the Health Center. It provides hospital, medical and surgical care on a 12-month basis for injuries or illness during the school year, holidays, summer vacation, and other times when the student is off campus. Students who register for the fall semester have only one opportunity to enter or reject this program each year, at the time of payment of the fall semester bill. It is also offered on the spring semester bill for new spring registrants only. Married students desiring family coverage under the plan now in existence at the University are advised to contact the Student Health Services. All candidates for and members of intercollegiate athletic teams are required by the Athletic Department to subscribe to the supplementary insurance plan.

### COMMENCEMENT FEE

A commencement fee of \$10 is assessed students in September of their senior year, as commencement exercises and events are intended to be self-supporting.

### SPECIAL UNDERGRADUATE STUDENTS

The Special Student tuition rate is \$15 per credit for Massachusetts residents, up to a maximum of \$150, and \$77.50 per credit for nonresidents, up to a maximum of \$775. Every student must pay a \$1 I.D. card and a student taking three or more courses a semester must pay a Campus Center fee and a health fee. (Available only to staff and spouses of employees and full-time students).

### CREDIT BY SPECIAL EXAMINATION

Any student receiving credit by special examination must pay \$5 per credit before the examination may be taken. This fee is nonrefundable.

### SCHOLARSHIP PAYMENT

Known scholarships are shown on the fee

bills. If such items are not shown, deductions may not be made from the bill until satisfactory evidence has been presented to the Bursar's Office by the recipient.

#### **Payment Due Date**

All charges for tuition, fees, board and room rent are due and payable prior to the date of registration of each semester. Bills will be rendered in advance with due date shown and payment may best be made by mail. No student may register until all University charges are paid.

#### **Late Payment and Registration**

Any student who does not make payment of semester charges by the date specified may be required to pay a late payment fee of \$25.00.

#### **Refunds**

##### **TUITION AND FEE REFUNDS**

A student who leaves the University for any reason, except as specified below, before a semester is completed will be granted a pro rata refund of tuition and fees. A student who makes an advance payment and then for any reason does not attend any part of the next semester or term at the University will be given a full refund of tuition and fees. The \$15 matriculation payment required of new students is not refundable.

Refunds are first applied to reimburse scholarship or loan funds (up to the full amount), and any remaining amount is refunded to the student or parent. A student who is suspended or expelled from the University for disciplinary reasons forfeits all rights to a refund.

##### **Refund Schedule**

##### **Regular Term**

- a. Within the first two weeks from the beginning of semester or term (Registration Day) — 80%.
- b. During the third week — 60%.
- c. During the fourth week — 40%.
- d. During the fifth week — 20%.
- e. After the fifth week — no refund.

##### **Summer Session**

- a. During the first week — 60%.
- b. During the second week — 20%.
- c. After the second week — no refund.

##### **ROOM RENT AND BOARD REFUNDS**

A student who has made an advance payment of room rent will be granted a full refund of prepaid room rent if he or she

fails to attend any part of the next semester or term or does not reside in a residence hall or other housing. Prepaid board will be refunded on a special per diem basis.

Any student who occupies his/her assigned accommodations and subsequently leaves the University prior to the end of the first full class week shall automatically be charged a minimum of \$100 for his/her room. Any student who leaves the University during the second through fifth weeks shall be charged \$100 plus 20% of the remaining balance for each week or part thereof. No refunds will be made after the fifth week of the academic semester. Refunds will be made during the refund period only to students who officially withdraw from the University through the Registrar's Office and according to the Registrar's official withdrawal date. The Dean of Students' Office will be authorized to make exception to the above only for reasons of involuntary entry into military service or for reasons of 'extreme emergency'. Any exception made, however, shall not apply to the \$100 minimum charge which shall be levied in all cases automatically.

## **Student Personnel Services**

Student Personnel Services comprise a number of agencies concerned with non-academic activities — residence halls, health, counseling, student activities, security, admissions, records, career planning, financial aid, and related services.

The Vice Chancellor for Student Affairs is responsible for the overall direction for departments providing services which, in addition to the above, provide support services for the entire campus community.

Student Personnel Services not described elsewhere in this Bulletin include the following:

The Housing Office has responsibility for the supervision of residence hall room assignments and room changes and serves as a central source of information for off-campus housing listings.

The International Programs Office assists and coordinates international programs, including the study abroad pro-



grams of the University of Massachusetts. The office also has information on low-cost international travel, international student identity cards, financial aid for study abroad, and work opportunities overseas.

The Foreign Student Office offers assistance to foreign students, faculty, and staff and should be consulted in regard to all matters pertaining to their official immigration status while in the United States. The Foreign Student Office is part of the International Programs Office.

The Admissions and Financial Aid Office is responsible for all administrative procedures with respect to undergraduate admissions to the University, including liaison with high school guidance counselors, Community College staff personnel, and other admissions officers for transfer students; it also passes on re-admission of returning and re-entering students and admissions standards set in coordination with the Vice Chancellor for Academic Affairs and academic departments.

The Registrar's Office is responsible for registration (enrollment) and matriculation of undergraduate students; administrative procedures relating to course loads, courses of study, withdrawals, grade reports, and transcripts; and maintaining the permanent academic record cards.

The Office of Transfer Affairs is a resource center for all matters pertaining to the transition process of students entering the University from other institutions of higher education.

The Student Development Center provides personal, social, educational and career counseling services to present and past students. A credentialing service provides a place for each student to establish and maintain an up-to-date file of personal records, (including registration information), a developmental resume, letters of recommendation, and other supportive documentation. Copies are sent to prospective employers upon their request (no charge) or when initiated by the candidate (a nominal charge). The Center is an important source of information and consultation on teacher certification requirements for students planning to teach in public schools.

The Department of Public Safety com-

prises the University Police, the Security Guard Force, and the University of Massachusetts Police Training Institute. It works closely with the Town of Amherst Police Department, the Massachusetts State Police, and other state law enforcement and public service agencies.

The Campus Security Force is responsible for the security of University property, provides protection of life and liberty, parking control, emergency transportation of sick and injured, and guard services. In accordance with provisions of the Code of Student Conduct, student ID cards or other means of identification must be shown upon request to any properly identified member of the security department, to enable the officer to perform his/her assigned duties.

University police officers are responsible for the public safety of all persons and property within the physical boundaries of the University campus.

## Health Services

The University Health Services is organized to provide a high quality comprehensive health program for the University community. Each student pays a health fee which provides a wide range of prepaid services in campus facilities. In addition, a number of other services are available on a co-payment basis.

Physicians, nurse practitioners, and other health professionals work as a team to provide medical care to students at the Health Center. Complete facilities located at the Center include x-ray, laboratory, pharmacy, and physical therapy facilities, as well as an inpatient service for those in need of hospitalization. Specialty services such as allergy and eye care clinics are also provided, as are consultation in orthopedic surgery, and obstetrics and gynecology.

All students submit health data upon entrance to the University. Any student who is under medical supervision prior to entrance is urged to have his/her physician write to the Health Services, giving reports and instructions in appropriate detail. In brief, the Health Services attempts to provide each student with a coordinated and comprehensive program of

health supervision formerly provided by the family physician.

The Dental Health Division provides emergency dental care, routine oral examinations, and dental education as part of the health fee. Some services, such as cleaning and restorative care, are provided on a modified fee-for-service basis as time permits.

Recognition of the specific emotional needs of students in an educational environment is recognized by the provision of an active mental health program. The Mental Health Division provides personal and couples counseling, individual and group therapy, and community consultation.

All visits to the Health Services are treated as confidential. No information is released without the written permission of the student.

The Health Education Division offers programs aimed at the development of attitudes and behavioral patterns which promote healthful personal and community living. Programs include workshops, discussion groups, peer training programs and consumer activities in such areas as sexuality, nutrition, alcohol and first aid.

The Environmental Health and Safety staff operates to ensure a safe and healthful environment for all who live or work on campus.

The Student Advisory Board works with the Health Services staff in reviewing policy, evaluating services and initiating and developing new programs. Students are urged to participate.

A supplementary insurance plan has been developed to provide for that hospital and surgical care not available at the Health Center. This optional program can be elected in September only. The insurance provides coverage for twelve months. All candidates for and members of inter-collegiate athletic teams are required to subscribe to this supplementary insurance plan.

## **Student Activities**

### **Campus Center Complex**

The Campus Center Complex is composed of the Murray D. Lincoln Campus Center, the Student Union Building, and the Parking Garage. It houses the offices of the

Campus Center Director and his staff, the Student Activities staff, the University Ombudsman, the student government staffs, and RSO groups.

Service departments of the complex include the University Store, the Campus Assistance Center, cashier's office, U.S. Post Office, barber shop, games area, music library and listening lounge, sweet shop, print shop, media services, Campus Travel Center, and overnight accommodations with parking facilities and food services (four cafeterias and the Top of the Campus restaurant and cocktail lounge). Meeting rooms, lounges, reading rooms, and art galleries are available for student and general campus use.

The Campus Center Governing Board, comprised of undergraduate and graduate students, determines policy for the operation of the Center. The Program Council, a standing committee of the Board composed wholly of students, selects, plans, and executes all Center activities in art, music, dance, movies, special events, etc. Any student may apply for membership.

Construction and operating costs are met from student fees and income generated from general operation, particularly of the Food Service Department, the University Store, and Overnight Accommodations. This is a major factor in maintaining student fees at a reasonable rate.

The Campus Center hosts programs sponsored by the Division of Continuing Education, the alumni of the University, and many service organizations. The Complex is also used heavily for conferences, institutes, workshops, and short courses.

### **Student Activities Office**

Headquarters for Recognized Student Organizations (RSO), the Student Activities Office in the Student Union provides program resource materials, counseling on program planning, advice on program selection and procurement, and assistance on budgeting, purchasing, procurement of campus support services, contracts, and other business procedures.

The RSO staff provides to student groups a computerized banking and book-keeping service and offers advice on financial and business concerns such as bidding, insurance, budgeting and accounting. The staff also includes a Crafts

Adviser who operates, manages, and advises students in the Student Union Craft Center. Most members of the Student Activities staff are Notaries Public for the convenience of students, particularly for absentee balloting.

The University expects that no student will be excluded from membership in any club, society, fraternity, sorority, or other organization for reasons of race, creed, color, sex, or national origin except those instances wherein groups are specifically exempted by federal law. Campus groups belonging to national bodies which openly or covertly endorse such discrimination are in violation of University principles. Alleged violations are to be reported to the Dean of Students. There are over 500 student organizations ranging in interest from political, religious and cultural, to social, professional, and recreational. Some of these include:

#### **Media**

**WMUA** — The campus radio station (91.1 FM), owned and operated by students.

**Black Mass Communications** — Black students' media group designed to bring black news, current events and culture to the community.

**The Daily Collegian** — One of the largest student newspapers in the country.

**Drum** — A Black literary magazine, published two or more times per year. It features art, fiction, essays and commentaries.

**INDEX** — The University undergraduate yearbook; one of the oldest and largest in the nation.

**Spectrum** — Published about two times a year, *Spectrum* features poetry, fiction, drama, art, photography, etc.

**Shorthorn** — The Stockbridge College student newspaper, published weekly or bi-weekly.

**STOSAG** — The Stockbridge College yearbook published annually.

#### **Professional and Special Interest Clubs**

Approximately fifty professional clubs established in connection with the various major courses of study, stimulate students' professional interest in their chosen fields and afford opportunity for discussion of technical subjects of mutual interest.

Special interest groups cover an even wider range of interests, in many cases offering learning experiences in subjects not included in the academic areas of the University (e.g., religion, politics, sports, hobbies, etc.).

#### **Social Action Groups**

**Belchertown Volunteers** — Belchertown Volunteers work with the mentally retarded at the Belchertown State School.

**Northern Educational Services** — NES volunteers tutor English-speaking inner-city children, mostly in reading and math.

**Poverty Committee** — Deals with the problems of welfare, united mine and farm workers support, National Alliance Against Racism and Oppression, etc.

**The Boltwood Project** — Funded by the Student Senate, its members work with the mentally retarded at Belchertown State School.

**Room To Move** — Drug counseling drop-in center, cooperating with the Health Services.

**Coalition for Environmental Quality (CEQ)** — Works toward mobilizing constructive and informed activism on environmental matters.

**Massachusetts Public Interest Research Group (MassPIRG)** — Modeled after the Ralph Nader organization in Washington, and funded by college students.

**The University and State Communications Council** — An undergraduate student group which works extensively with the University administration, the State Legislature, and the media in an effort to open and develop channels of communication between students and the people involved in these three areas.

In addition to these groups there are other special interest professional, political, religious, social action, educational, cultural, governmental, recreational, and media groups, plus honor societies, residence hall groups, fraternities, and sororities.

#### **Non-Traditional Student Assembly and CAOS**

The Non-Traditional Student Assembly is a fairly new RSO group formed in response to the recent influx of older undergraduate students.



An older student is any person who has not come to college directly from high school. Membership in the NTSA is automatically extended.

CAOS (Counselling Assistance for Older Students) is an outreach program of the NTSA. CAOS provides counsellors for academic and personal problems ranging from pre-registration course selection to financial aid, house hunting and psychological counseling. A staff of trained volunteers and paid assistants is available Monday-Friday from 9-4 in the CAOS office, 308 Student Union.

#### **Programming Organizations**

*Distinguished Visitors Program (DVP)* — Supported by student tax funds to bring to campus nationally and internationally known persons to speak on domestic and international affairs, the sciences, the humanities, and the arts.

*Campus Center Program Council* — Responsible for major programming in the Campus Center/Student Union Complex, including concerts, lectures, films, art exhibits and acquisitions, recreational activities, crafts, etc.

#### **Student Honor Societies**

*Adelphia* — Men's non-academic honor and service society (senior and junior classes).

*Mortar Board* — National honor society for senior women.

*Scrolls-Maroon Key* — Sophomore honorary-service society.

*Revelers* — Group of upperclassmen who promote and encourage interest in campus activities.

*Alpha Phi Omega* — National service fraternity.

*Gamma Sigma Sigma* — National service sorority.

*Delta Sigma Rho* — *Tau Kappa Alpha* — National honorary forensic fraternity.

#### **Academic Honor Societies**

*Phi Beta Kappa* (arts, humanities, and sciences)

*Phi Kappa Phi* (all fields of study)

*Sigma Xi* (pure and applied science)

*Sigma Gamma Epsilon* (earth sciences)

*Omicron Nu* (home economics)

*Phi Tau Sigma* (food science)

*Phi Eto Sigma* (freshman men, all fields of study)

*Tau Beta Phi* (engineering)

*Beta Gamma Sigma* (commerce and business administration)

*Alpha Lambda Delta* (freshman women, all fields of study)

*Eta Kappa Nu* (electrical engineering)

*Alpha Zeta* (agriculture)

*Xi Sigma Pi* (forestry)

*Alpha Pi Mu* (industrial engineering)

*Kappa Delta Pi* (education)

*Phi Sigma Alpha* (political science)

#### **Student Government**

The Student Government Association (SGA) works for fundamental academic and social reform on campus while providing services to students, including a lecture-note program, book loans, bus service, course description guide, attorney for students. The SGA is working toward full student self-determination in social and academic life.

All undergraduates are members of the SGA and are eligible to join its activities. The Student Senate is the legislative arm of the SGA. The seven area governments determine policies in their respective areas.

The student role in running the University has increased greatly in recent years. Students interested in University reform should contact the SGA President.

#### **Fraternities and Sororities**

Men's social fraternities include Alpha Tau Gamma (Stockbridge School), Beta Kappa Phi, Delta Chi, Kappa Sigma, Lambda Chi Alpha, Phi Mu Delta, Alpha Epsilon Pi, Phi Delta Theta, Q.T.V., Zeta Psi, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Phi Epsilon, Tau Epsilon Phi, Theta Chi, and Zeta Nu. Women's social fraternities include Alpha Chi Omega, Chi Omega, Iota Gamma Upsilon, Kappa Alpha Theta, Kappa Kappa Gamma, Lambda Delta Phi, Sigma Delta Tau, Sigma Kappa, and Sigma Sigma Sigma. There is one co-ed fraternity, Sigma Alpha Mu.

A Greek Council consisting of the presidents and one representative of these fraternities is the area government for this residential area. Each of the fraternities



owns its own house, and the members are responsible for the daily maintenance, financial management, meal planning, governing, and organizing of special events or programs.

#### **Music Organizations**

The University Symphony Orchestra, the bands, and the choral organizations are in the Department of Music. Membership is open to all students, faculty, alumni, and others in the community.

#### **University Theater**

The University Theater offers public performances of plays during the regular academic year winter season. Productions grow out of study projects as part of Department of Theater's curriculum, and are primarily the work of graduate and undergraduate theater majors. However, the Department welcomes non-majors and persons from the University community at large. Try-outs for all productions are announced publicly. The new Fine Arts Center includes a studio theater, a main stage proscenium theater, and fully-equipped shop and rehearsal areas.

#### **Debate**

The University Debate Union is an academic and co-curricular activity of the Department of Communication Studies. Each year, debate teams research and debate an intercollegiate proposition dealing with an important national or international problem. The debators attend tournaments at colleges and universities throughout the United States.

#### **Arts Council**

The University of Massachusetts Arts Council is composed of six undergraduate and three graduate students, six faculty members and one non-faculty staff member. Student and faculty members are appointed by their respective Senates. The staff member is appointed by the Council.

The Arts Council, together with its professional staff, develops and administers a varied series of professional entertainment for the University community including Dance, Theater, Chamber Music, Opera, Ballet, etc. The Arts Council endeavors to bring to the University some of the world's finest performing organizations and artists.

The University of Massachusetts Arts Council also supports the University Art

Gallery. The Gallery is open year round and provides exhibitions of traveling shows.

A schedule of Arts Council events may be obtained by contacting the Council office.

#### **Athletics**

The University is represented by teams in football, soccer, cross country, basketball, swimming, wrestling, indoor and outdoor track, hockey, golf, tennis, baseball, lacrosse, gymnastics, skiing, and crew. The women are represented in nine intercollegiate sports: basketball, field hockey, gymnastics, skiing, softball, swimming, tennis, volleyball, and crew.

The University also sponsors a broad program of men's and women's intramural activities. Team sports available each year include touch football, powder puff football, basketball, bowling, volleyball, soccer, badminton, softball, horseshoes, handball, bicycle racing, and tug-o-war. Individual activities include cross country, squash, paddleball, wrestling, wrist-wrestling, swimming, table tennis, weight lifting, and tennis.

The University holds membership in the: Yankee Conference, National Collegiate Athletic Association, Eastern College Athletic Conference, New England College Athletic Conference, Association of Intercollegiate Athletics for Women, Eastern Association of Intercollegiate Athletics for Women, and Massachusetts Association of Intercollegiate Athletics for Women.

#### **Alumni Association**

The Associate Alumni is the general alumni organization of the University, with headquarters at Memorial Hall. The *Alumnus* magazine is published by the University seven times a year.

#### **Religious Activities**

The University gives support to the religious life of its students by affording the use of University facilities for student groups of all faiths. It cooperates with the official agencies of the three faiths most largely represented at the University by recognizing the contributions of their privately supported chaplains and by giving them facilities and privileges for their work.

Other religious groups also meet regularly on campus.

### **Motor Vehicles**

All student, faculty, and staff motor vehicles must be registered with the Parking Office, Room 1, Munson Hall.

Any student may be permitted to have a motor vehicle on campus provided it is registered with the Parking Office and complies with published University regulations.

## **Financial Aid**

### **General Information**

Financial aid consists of scholarships and grants, self-help in the form of loans, and employment. Financial aid is offered to those students who cannot, through their own and their parents' reasonable efforts, meet the full cost of a college education.

Financial aid programs are funded from a number of sources: State and Federal appropriations, private philanthropy, University Alumni and others. Each student applicant is automatically considered for every University-administered program for which he/she may be eligible. Students desiring further description of specific financial aid programs may obtain information sheets from the Financial Aid Office, Room 243, Whitmore Administration Building.

### **Application Procedures**

An application for financial assistance consists of two forms: A University Aid Application and the Parents' Confidential Statement. (Student Financial Statement for students who meet the legal criteria for financial independence.) Both forms must be submitted before an application will be processed.

### **INSTRUCTIONS FOR HIGH SCHOOL SENIORS**

All high school seniors applying for financial assistance must file the Parents' Confidential Statement. The deadline for priority aid consideration is March 1 of their senior year. Applications received after that date are considered late and will be processed only if funds remain.

**Special Notice:** The Basic Educational Opportunity Grant Program (BEOG) is a new Federal grant program. Maximum awards under this program could be as high as \$1400 per year. The BEOG program is an entitlement program under

which all eligible applicants who demonstrate financial need according to the Federal guidelines will receive Basic Grants. Applications should be available after February 1 through your high school. (If not available through your high school contact this office.)

*Applicants for Financial Assistance from the University of Massachusetts Amherst MUST Apply for a Basic Grant.*

### **INSTRUCTIONS FOR ALL OTHER APPLICANTS**

The priority deadline for financial assistance for all other students is April 30 preceding the academic year for which aid is requested. Students who feel that they are financially independent of their parents should contact the Financial Aid Office to see if they are eligible to file a Student's Financial Statement.

### **Disbursing of Awards**

All financial assistance except employment earnings are paid in installments at the beginning of each semester in the form of a credit on the recipient's bill.

### **Types of Aid**

#### **SCHOLARSHIPS AND GRANTS**

The office of Financial Aid administers more than 20 scholarship and grant programs with differing eligibility criteria. Residency, academic average, field of study and parental income may determine eligibility for specific programs. Scholarships normally range from \$200 to \$2000.

#### **LOANS**

##### *National Direct Student Loan Program*

A student may borrow up to \$2500 per year under this program. Interest at 3 percent begins nine months after completion of the program; the loan is to be repaid within 10 years. Because of the amount available, this program is necessarily limited and selective.

##### *Higher Education Loan Plan*

The student may obtain a loan of up to \$2500 per year from the bank of his or her choice through the Higher Education Loan Plan.

#### **EMPLOYMENT**

Under the College Work-Study Program.

#### **Benefits for Veterans and Their Dependents**

Veterans or their dependents eligible for educational benefits under the Veter-

ans Bill, P.L. 358, the Disabled Veterans Bill 894, or the War Orphan Bill 634, should contact the Veterans Affairs Office at the University 30 days before their classes begin for regular enrollment or up to 120 days before classes for Advancement Payment of their checks.

Veterans whose home of record was Massachusetts when they entered the Service may be eligible to apply for a state tuition waiver.

## General Services

### University Library System

The University Library System is composed of the main University Library, a 28-story building which opened in the summer of 1973, and several branch libraries, of which the two principal ones are the Morrill Biological Sciences Library and the Physical Sciences Library. Present holdings include over 1.2-million books, periodical volumes and government documents, and over 258,000 microforms. More than 10,000 periodicals are currently received.

### The University Press

The University of Massachusetts Press, established in 1964 as the book publishing division of the University, publishes scholarly and artistic works which make substantial contributions to the community of learning.

### Language Laboratories

The James W. Butler Language Laboratories provide special study facilities to students enrolled in foreign language courses. Lesson tapes and RAL program masters are produced, transcribed, and programmed in the Recording Studio and the Transcription Center. A highly trained technical staff is available at all times.

### Office of Public Affairs

The Office of Public Affairs serves as liaison between the campus community and the general public, and as an internal information center for the benefit of faculty, students, and administration. Through its six departments — Editorial Services, Graphic Design and Production, News Bureau, Creative Services, Photographic Services and Radio Station WFCR — the office supplies information to all communications media as well as to agen-

cies of government, schools and other organizations, and individuals.

### Office of Budgeting and Institutional Studies

The Office of Budgeting and Institutional Studies is responsible for the coordination of campus fiscal planning, analysis, and information reporting.

### Other Facilities and Services

Audiovisual Center  
Cooperative Extension Service  
Cooperative Fishery Unit  
Cooperative School Service Center  
Cooperative Service Bureau  
Cooperative Wildlife Research Unit  
Institute for Man and Environment  
Institute of Agricultural and Industrial Microbiology  
Labor Relations and Research Center  
Massachusetts Agricultural Experiment Station  
Massachusetts Population Research Institute  
Northeast Regional Media Center for the deaf  
Polymer Research Institute  
Program in Urban and Regional Problems  
Technical Resource Service  
University Computing Center  
Water Resources Research Center

### Five College Courses

Amherst, Hampshire, Mount Holyoke, and Smith Colleges and the University of Massachusetts/Amherst combine their academic activities in selected areas for the purpose of extending and enriching their collective educational resources. Certain specialized courses not ordinarily available at the undergraduate level are operated jointly and are open to all. In addition, any qualified student in good standing at any of the institutions may take a course without cost at any of the others, if the course is significantly different from any available to him or her on the home campus. The course must have a bearing on the educational plan arranged between the student and the adviser. Approval by the student's adviser and Academic Dean of the College at the home institution is required. Permission of the instructor is required for students from other campuses.

Students should apply for interchange



courses at least six weeks prior to the beginning of the semester. Free bus transportation among the five institutions is available for interchange students.

Students interested in such courses will find current catalogs of the other institutions in departmental offices, the University Library, or the Office of the Registrar. Applications may be obtained from the CASIAC Office, E-22 Machmer.

#### **Regional Student Program**

The University participates in a regional cooperative program administered by the New England Board of Higher Education. This program, known as the Regional Student Program, permits qualified residents of the New England states to study with in-state tuition and admission privileges at any of the state universities, the Lowell Technological Institute, and the public two-year colleges and technical institutes in a wide variety of study areas.

The purpose of the program is to expand opportunities for higher education for New England residents by making available on an equal basis to all those courses not commonly offered at every institution.

Detailed information about this exceptional program can be obtained from any guidance counselor or from the New England Board of Higher Education, 20 Walnut Street, Wellesley, MA 02181.

#### **Pre-Law Advising Program**

The Pre-Law Advising Program provides information on the nature of legal education, admission to law school, and career opportunities in the legal profession. Interested students are urged to register with the Pre-Law Adviser, E-22 Machmer.

#### **Physically Disabled Students**

The University is becoming more and more accessible to academically qualified physically disabled students. Although some architectural barriers remain, most disabled persons can navigate the campus with little difficulty. Early registration, preferential scheduling, orientation programs, housing assistance, a reader's directory for the blind, pre- and post-admission counseling are a few of the services available. Admission to the University is based entirely on the academic qualification of the applicant. Admission procedure remains the same for all applicants, regardless of disability.

For further information, contact: Office of Handicapped Student Affairs, 229 D Whitmore Building, Tel. (413) 545-0892.

## **Special Academic Programs**

### **Bachelor's Degree With Individual Concentration**

The Bachelor's Degree with Individual Concentration (BDIC) is a four-semester program in individualized study supervised by an interdisciplinary faculty committee rather than by one of the departments, and leads to either a Bachelor of Science or Bachelor of Arts with Individual Concentration. Work for this degree, usually beginning with the junior year, takes the place of a conventional major and provides students with an opportunity to pursue an area of study not otherwise available at the University. The program must be interdisciplinary, unavailable as such through an existing undergraduate major, and make full use of existing University resources. In developing their concentrations, students may combine courses from departments or schools within the University, from among the Five Colleges, and from limited amounts of independent study and/or internship opportunities.

The course of study is developed by the individual student in conjunction with the full-time University faculty member serving as his/her sponsor, and submitted to the BDIC Supervising Committee for approval.

#### **Application to BDIC**

Students with at least four semesters remaining at the University should initiate the application process with a BDIC counselor early in the second semester of their Sophomore year.

#### **Colloquia**

Colloquia are one-credit courses which seek to augment the academic offerings of departments and schools. They meet for a minimum of 16 hours per semester and require roughly as much work as one third of an average introductory course. They are held in residence areas and are generally proposed and taught by students with faculty sponsorship and approved by the



student/faculty academic policy committees of each residential area.

### **Continuing Education**

The Division of Continuing Education helps meet the educational needs of all part-time undergraduate students; manages all conferences, institutes, workshops, short courses, and clinics on the Amherst campus and throughout the Commonwealth sponsored by the University; and designs special educational programs for citizens of the Commonwealth and the region who are not regular full-time students at the University. The Division has its own undergraduate degree program. The Bachelor of General Studies requires 120 hours of credit, up to 75 of which may be transferred from other institutions. Students may be admitted to evening courses or to day courses on a space-available basis. Inquiries may be directed to the Director of the Division, Hills House North.

### **Everywoman's Center**

The Center serves the Amherst campus and the surrounding community as a headquarters for women's issues and concerns. It operates an extensive academic, personal, and vocational counseling service; maintains a comprehensive library of books, periodicals, and other publications relating to the feminist movement; maintains listing of career opportunities for women; sponsors Project Self — non-credit workshops which explore what it means to be a woman in today's world; and conducts workshops and support groups on a wide range of topics related to women's issues.

### **Global Survival Freshman Year Program**

The Global Survival Freshman Year Program is multi-disciplinary and problem-centered, focusing on five major areas of concern: war, peace and world order; cross-cultural communication and conflict; environmental deterioration and economic development; population; and resources. The faculty is drawn from various departments on campus and works closely with students in courses, field experiences and independent study. Participants take a combination of University and Global Survival courses for a total of 15 credit hours per semester. Features of

the program include identification with a small number of freshmen; close relationship with faculty; an opportunity to explore crucial world issues in an integrated format; and an opportunity to pursue independent work in the freshman year.

### **The University Honors Program**

The Honors Program affords highly motivated students of proven ability the opportunity of taking University courses more intensively and in closer contact with professors and other students. It offers an alternative to the core requirement system and allows students more freedom in choosing their course of study.

Any student who has completed one semester's work at the University, including one Honors course, may be eligible for admission. However, since juniors and seniors are now expected to go through a departmental Honors program, evidence of their major department's willingness to accept them may be necessary. The student must obtain an application form from the Honors Office, in E-23 Machmer, must have on file in the Honors Office or obtain, an evaluation by the professor of his or her performance in the Honors course previously taken, and must obtain a copy of his or her transcript from the Records Office in Whitmore (which can be obtained free if the candidate says it is for the Honors Office). When the Honors Office has received these three items, an interview with the candidate will be arranged, and if the student and the interviewer agree that it is in the best interest of the student to join that program, the student will be admitted.

While Commonwealth Scholars are exempted from regular University core requirements, they must satisfy the requirements of their major and must take one Honors course every semester in residence and in the program, and must take a minimum of six Honors courses.

A Commonwealth Scholar must also maintain a cumulative average of at least 3.0 and follow the procedural requirements of the program.

### **DEPARTMENTAL HONORS**

Any student who wishes to be eligible to graduate with an Honors designation of *Magna Cum Laude* or *Summa Cum Laude* must pursue a Departmental Honors Pro-

gram. A student must usually have a cumulative average of 3.2 or higher to be eligible for a Departmental Honors Program. Any student interested in pursuing Departmental Honors should confer with the Honors Coordinator of his or her major field.

#### **Legal Studies Program**

The Legal Studies Program provides introductory and advanced courses about the nature and function of law, presents field work and research opportunities, conferences, practica, and special courses about law for the University community, and enables a limited number of students to major in Legal Studies. The major is individually designed around a basic core of study. This is not a "pre-law" preparatory program; it is an interdisciplinary exploration of the phenomena of law, power, and authority, as manifested in culture and society.

#### **Orchard Hill Residential College**

Orchard Hill Residential College is a unit of four residence halls offering distinctive educational and cultural programs for students seeking an alternative college experience. Orchard Hill offers a substantial number of 3-credit interdisciplinary courses each semester and an increasing percentage of these satisfy University core requirements. In addition, the Hill offers a large variety of student initiated colloquia, sponsored by faculty members and supported by the Academic Affairs Office.

The program focuses on articulation of student needs and concerns (life planning, career decisions, and the individual's own program of education). Special seminars and courses reflect major areas of social and personal concern. For more information, inquire at 103 Eugene Field House, Orchard Hill.

#### **The Center for Outreach Programs**

Outreach functions as a clearinghouse for off-campus community service. Its two chief components include: a) Student Volunteer Services, a student initiated and student administered program, which places students and other interested persons in over 75 community service organizations in western Massachusetts for five to 20 hours a week, usually without pay or academic credit; and b) a student internship program which provides students

with the opportunity to earn up to 15 credits while participating in various federal, state and local community service programs for a semester.

#### **Overseas Study**

The International Programs Office may be consulted for specific information on overseas study opportunities.

**Freiburg Program.** In cooperation with the University of Freiburg, Germany, the University of Massachusetts operates its year-long Freiburg Program. Students enrolled in the Program are regularly enrolled students of the University of Freiburg, and take courses in a wide range of social science and humanities courses. The Freiburg Program is not restricted to students concentrating in German. Enrollment is limited to graduate students and superior upper division undergraduates with fluency in German.

**Field Program in Anthropology, Europe.** A four- or seven-month field program in Europe open to advanced undergraduate students in anthropology during the spring or summer.

**Grenoble Program.** The University of Massachusetts Semester in Grenoble Program is offered in cooperation with the Comité de Patronage des Etudiants Etrangers de L'Université de Grenoble and is open to approximately 40 students. Students with little or no prior knowledge of the language may pursue studies in the French language and civilization at the elementary level. Majors and other proficient students pursue courses in language, literature, and civilization at the middle or upper level depending on placement by examination.

**Academic Year Program, Keele University, England.** Through an exchange program, several undergraduates spend their junior or senior years at Keele University, Staffordshire, England. Open to superior students concentrating in social sciences, humanities, and science.

**Academic Year Program, Chelsea College of Physical Education, England.** A junior year program for undergraduate women majoring in physical education.

**Academic Year Program, University of Victoria, British Columbia.** An undergraduate student exchange program with the University of Victoria, British Columbia, Canada, permits several under-

graduates each year to spend their junior or senior years at that university.

Other academic year programs through which undergraduates study abroad include student exchanges with the University of Helsinki, Finland; the University of Lagos, Nigeria; University College, Dublin; The University of Lancaster, the University of Sussex, North East London Polytechnic, all in England; the University of Stirling, Scotland; and the University of the West Indies at its Jamaica campus. Semester field work programs include Social Work Internships in England and practice teaching at the Bi-national Center, Bucamaranga, Colombia.

**Summer Programs.** Summer study programs concerning which information may be secured from the International Programs Office and the Summer Session Bulletin, include offerings in Bologna, Italy; Freiburg, Germany; Pau, France; Oxford, England, and St. Vincent, West Indies, the latter in anthropology.

#### **Project 10**

Project 10 is a semi-autonomous experimental program based in Pierpont House in Southwest Residential College. The Project's members are drawn from students and faculty of the University. They participate in a wide variety of seminars, workshops, and tutorials each semester, and attempt to explore different ways of learning and different options on credits and grading. The Project is an attempt to build a living-learning community which can foster and sustain individual growth and personal expression, while its members learn how to make decisions, how to measure learning, and how to accept accountability to others.

A special program option within Project 10, the Inquiry Program, offers an alternative to the general University degree requirements. It is an alternative to the ordinary approach to separate courses and credits in the freshman and sophomore years. In fact, in Project 10 there is nothing called the freshman or sophomore class. Students individually negotiate plans of study for the first 60 credits of undergraduate work. For more information contact the Project Office in Pierpont House, Southwest Residential College.

#### **Rhetoric**

The Rhetoric Program offers a flexible and

varied experience for students fulfilling the University's core requirement. The requirement states that all students (with certain exceptions for advanced placement) will take two courses in Rhetoric, one of which must be Rhetoric 100 or Rhetoric 110. Through an interdisciplinary effort, involving teachers from English and Communication Studies as well as other departments, the Program seeks to give students help and practice in many kinds of writing and oral communication. There is no undergraduate major in Rhetoric.

#### **Southwest Residential College**

Southwest Residential College, the largest residential area in the University, offers a diverse educational program open to all its students. In special cases, non-Southwest students may also enroll. These courses are offered directly in the dormitories or in one of the several educational Centers. The program consists of experimental 3-credit courses designed to meet the needs of the Southwest community and to supplement regular University offerings. It also includes special cross-listed sections of departmental offerings and 1-credit, student-taught "colloquia" offered during the semester and lasting usually for eight weeks. The course listings are published each semester in a brochure available in the Southwest Academic Affairs Office, John Adams Lobby, during the pre-registration and registration periods.

Southwest recognizes two crucial areas of concern: racism and sexism. These issues have been made the express priorities of this residential area, approached through specific courses, through counselor training and staff training, and through new programs in Urban-Community Studies and a Transitional Year Program for first-year students.

#### **Summer Session**

The Summer Session at the University is open to freshmen who wish to begin their college education immediately upon graduation from high school, to seniors completing requirements for September graduation, to other regular University undergraduates, and to special students currently enrolled in other colleges. A bulletin describing the summer program is available from the Registrar's Office in April of each year.



Students who begin their college careers in the summer are advised to plan their programs carefully with the aid of advisors.

#### **University Without Walls**

The University Without Walls program is one of 32 such units across the country developed under the sponsorship of the Union for Experimenting Colleges and Universities. The program enables students to earn a B.A. or B.S. from the University through a totally individualized learning program allowing independent study, internships, field experiences, credit for significant past learning experience, and other self-directed projects outside the classroom and campus. It welcomes participants of all ages and diverse backgrounds and interests, especially those who would not normally have access to the University but who are highly motivated and self-disciplined enough to succeed in directing their own learning projects. Upon admission to the program, students choose a faculty sponsor and advisor and prepare a learning contract outlining learning objectives, activities to meet those objectives, and evaluation procedures. Students must negotiate 120 credits in order to receive a degree, including University Core Requirements (33 credits) and residence credits (45 credits). Further information and applications may be obtained from the University Without Walls, Wysocki House.

#### **University Year for ACTION**

University Year for ACTION is a volunteer service program which offers undergraduates significant opportunities for attacking poverty in connection with community agencies while earning normal college credit. Students accepted into the program become Volunteers in ACTION (a new federal agency comprising Peace Corps and VISTA). The students work full-time or part-time, living on campus or in a local community located either in a major city or in a rural center of Western Massachusetts.

Service in a community agency may be in legal services, education, mental health, housing, consumer protection or environmental protection. Community agencies provide field direction and supervision, while the University pro-

vides instruction, academic credit, and program management.

Details concerning eligibility, application procedures, stipends, tuition, fees and other information are available at the ACTION Office, Arnold House.

#### **Upward Bound**

Upward Bound is an educational experience, motivating disadvantaged high school students to try for college. Upward Bound offers a summer academic program for 25 students on the campus and a "follow-up" program from September through May to some 95 high school sophomores, juniors, and seniors.

### **Schools, Colleges, Departments and Programs**

Undergraduate MAJOR programs are available in the following areas:

#### **College of Arts and Sciences**

##### *Faculty of Humanities and Fine Arts*

Afro-American Studies

Art

Chinese

Classics

Comparative Literature

English

Fine Arts

French

German

History

Italian

Japanese

Journalistic Studies/English

Music

Philosophy

Russian

Spanish

Theater

##### *Faculty of Natural Sciences and*

Mathematics

Astronomy

Biochemistry

Botany

Chemistry

Geography

Geology

Mathematics

Microbiology

Physics

Zoology



#### **Faculty of Social and Behavioral**

Sciences

Anthropology

Communication Studies

Economics

Political Science

Psychology

Sociology

#### **Interdisciplinary Programs**

Classics & Philosophy

Judaic Studies

Linguistics & Philosophy

Linguistics & Chinese

Linguistics & German

Linguistics & Japanese

Linguistics & Russian

Mathematics & Philosophy

Near Eastern Studies

Science

Social Thought & Political Economy

Soviet & East European Studies

#### **School of Business Administration**

Accounting

General Business & Finance

Management

Marketing

#### **School of Education**

Education

Human Development

#### **School of Engineering**

Chemical Engineering

Civil Engineering

Computer Systems Engineering

Electrical Engineering

Industrial Engineering & Operations

Research

Mechanical Engineering

#### **College of Food and Natural Resources**

Animal Sciences

Entomology

Environmental Design

Environmental Sciences

Fisheries Biology

Food & Agricultural Engineering

Food Marketing Economics

Food & Resource Economics

Food Science

Forestry

Home Economics

Hotel, Restaurant, & Travel

Administration

Human Nutrition

Natural Resource Studies

Park Administration

Plant Pathology

Plant & Soil Sciences

Wildlife Biology

Wood Technology

#### **School of Health Sciences**

Communication Disorders

Community Health & Health Education

Environmental Health

Health Laboratory Science

Medical Technology

Nursing

Public Health

#### **School of Physical Education**

Leisure Studies & Services

Physical Education

Sport Studies

## **College of Arts and Sciences**

The College of Arts and Sciences has programs of study leading to four bachelor's degrees: Bachelor of Arts, Bachelor of Science, Bachelor of Fine Arts, and Bachelor of Music. All departments offer a program leading to the B.A. degree. The B.S. degree may be earned only if the major is mathematics, science, or psychology. All the degree programs combine a study in depth in one area with supporting study in the other two of the three main divisions: 1) Humanities and Fine Arts, 2) Social and Behavioral Sciences, and 3) Natural Science and Mathematics. Courses appropriate to the distribution requirements in these three areas are noted in University catalogs by the respective codes (C), (D), and (E).

All degree programs must conform with the following five provisions. Advanced placement and transfer credits may be applied toward any or all of these qualifications, but at least half of the major program must be completed in residence.

1) A basic proficiency or experience in communicative skills must be achieved by completing six credits in rhetoric; the two rhetoric courses must include at least one of Rhetoric 100 or 110.

2) For the B.A. and B.S. degrees, a basic proficiency or experience with a foreign language must be demonstrated by a) completion of a foreign language course at the 140 level, b) score of 600 or above on a CEEB achievement test while in high school or placement test at this University,

c) satisfactory completion in high school of a fourth-level foreign language course or a third-level course in one foreign language and a second-level course in another, d) a year in high school in which English is not the basic language of instruction, or e) substitution of language-related study with proper authorization (see CASIAC).

3) Distribution is achieved by completion of courses in each of the two divisions of the College other than the one in which the major falls. With the understanding that work in the major is applicable to one or more of these divisions, this qualification is stated for all three divisions and all degrees as:

| Number of Core Courses for     |      |      |       |        |        |
|--------------------------------|------|------|-------|--------|--------|
| Division                       | Code | B.A. | B.S.* | B.F.A. | B.Mus. |
| Humanities                     |      |      |       |        |        |
| and Fine Arts                  | "C"  | 4    | 3     | 3      | 3      |
| Social and Behavioral Sciences | "D"  | 4    | 3*    | 3      | 3      |
| Natural Science & Mathematics  | "E"  | 4    | 4*    | 3      | 3      |

\*To qualify for a B.S. degree, at least 60 credits must be earned in science, mathematics, and/or psychology courses; distributional courses may be part of this minimum of 60.

4) An approved major program of the College must be completed. The traditional departmental major programs are the most common, and they are described in the following pages. A few others, including several interdepartmental majors, are specified and administered by standing committees of the faculty and are described elsewhere.

All major programs have these features in common: a) faculty guidance, b) a coherent program of study made up of at least 24 credits, at least 15 of which must be in upper division courses in this College, and c) a student has at least 12 completely free electives.

#### Advisory System:

When students elect a special major or are admitted to a specialized degree program, they may obtain a faculty advisor from that major. Faculty advisors help students choose their program of study and also serve as a communication link between students and the Registrar's Office. Students may choose a specific major on entrance or they may postpone this choice

until the fourth semester. Until choosing a specific major, students are listed as a College of Arts and Sciences major, and the College of Arts and Sciences Information and Advising Center (CASIAC) serves as a student's advisor.

A student has considerable freedom in choosing a program of study and major. However, a few of the major programs require sequences of courses which extend over seven or eight semesters. Students who do not take the right courses in their freshman year may have to use a summer session or extra semesters to accommodate these sequences if the ultimate major is Astronomy, Biochemistry, Chemistry, Mathematics or Physics, or if they are in the Bachelor of Music or Bachelor of Fine Arts program. Some standard freshman year programs are:

#### Bachelor of Fine Arts:

|                     |                           |
|---------------------|---------------------------|
| Rhetoric            | and two of the following: |
| Introduction to Art | Math or Science           |
| Studio Art          | Humanity                  |
|                     | Social Science            |

#### Social Science (B.A. or B.S.)

|                |                           |
|----------------|---------------------------|
| Rhetoric       | and two of the following: |
| Social Science | Humanity or Fine Art      |
|                | Math or Science           |
|                | Second Social Science     |
|                | Foreign Language          |

#### Mathematics (B.A. or B.S.)

|                 |                           |
|-----------------|---------------------------|
| Rhetoric        | and one of the following: |
| Math (Calculus) | Foreign Language          |
| Science         | Social Science            |
|                 | Humanity                  |

#### Bachelor of Music:

|                  |                           |
|------------------|---------------------------|
| Rhetoric         | and two of the following: |
| Music Theory     | Math or Science           |
| Music Literature | Social Science            |
|                  | Humanity,                 |
|                  | other than Music          |

#### Humanity (B.A.):

|             |                           |
|-------------|---------------------------|
| Rhetoric    | and two of the following: |
| Humanity or | Foreign Language          |
| Fine Art    | Social Science            |
|             | Math or Science           |
|             | Second Humanity           |

#### Science (B.A. or B.S.)

|                         |                           |
|-------------------------|---------------------------|
| Rhetoric                | and one of the following: |
| Chemistry               | Foreign Language          |
| or Physics*             | Humanity                  |
| Math                    | Social Science            |
| (Calculus, if prepared) | Second Science            |

\*Chemistry Majors elect Chemistry 113; Biology and Geology majors elect Chemistry 111; and Physics and Astronomy majors elect Physics 181.

## Faculty of Humanities and Fine Arts

### Department of

#### **Afro-American Studies, W.E.B. DuBois**

The W.E.B. DuBois Department of Afro-American Studies offers an undergraduate major for those students who wish to gain an in-depth knowledge of the history and culture of Black people in Africa and the New World. The course of study is interdisciplinary, and offers a variety of learning situations, both on and off the campus.

The maximum of 45 required major credits incorporates a number of disciplines in the social sciences and humanities. After taking a prescribed introductory core of 18 credits, the student may concentrate in the social sciences, history, or the humanities in which he or she is required to take 27 additional hours, including a field research project or equivalent and a senior thesis.

### **Art**

#### **ENTRANCE PROCEDURES**

Portfolios are required from all applicants except those applying for the B.A. in Art History. The portfolio should be in the form of 35mm colored slides of at least ten works. Slides must be submitted in a 9" x 11" clear plastic viewing sheet, each slide labelled with name, medium, and size. Slides should not be sent until requested by the Admissions Office. Portfolio examination for admission to the Art Department will be based on the criteria of demonstrated ability and high academic standard.

#### **PROGRAMS**

*Bachelor of Arts Degree Program* — The B.A. degree program is designed to provide an aesthetic and historic knowledge of the visual arts while affording an opportunity to develop creative ability. The B.A. degree program requires a greater involvement than the B.F.A. degree program in courses not directly within the Art Department. The B.A. degree program offers two majors: Art History and Studio.

The B.A. in Studio requires a minimum of 42 art credits (six elementary courses — 100, 102, 120, 122, 111, 113 — and eight upper division courses — numbered 200 and above, two of which must be art history electives.)

The B.A. in Art History requires a min-

imum of 30 art history credits (six credits at the introductory level — 111, 113 — and 24 upper division credits, which will include at least one seminar — 300 level course). As the declaration of the major is prerequisite to the selection of a faculty advisor, it is best to declare an Art History major within the freshman or sophomore years. Art History is taught as an area of the humanities tying in with the history, literature and philosophy of a given culture or period, and forming part of the history of ideas in general. Course offerings in the area are organized to provide three levels of instruction: a) Introductory Survey (100 level), b) Area Courses (200 level), c) Seminars (300 level).

#### *Bachelor of Fine Arts Degree (Studio) —*

During the first two years, the student experiences a foundation program of several courses in drawing, two and three dimensional design and a general history of art. Because of its contemporary nature and relevance, it is required that Modern Art 287 be taken as early as possible by B.F.A. degree program candidates. The B.F.A. program in Studio Art provides intensive coverage of one chosen medium: ceramics, printmaking, sculpture or painting, to be selected by the end of the sophomore year. The B.F.A. degree program consists of fewer core requirements to allow for concentration within the Art Department. It involves a minimum of 60 credits in studio art, 12 in art history and 48 credits in other disciplines for satisfaction of the University Core and graduation credit requirements.

*Bachelor of Fine Arts (Studio with Art Education)* — This program provides the student with the Massachusetts State Board of Education requirements for certification to teach Art in public school systems at either the elementary or secondary level. The program's minimal requirements include 39 credits in studio art, 12 in art history, 6 in art education, 15 in student teaching, 9 in education and psychology and 39 in other academic disciplines.

*Bachelor of Fine Arts (Design)* — The Design program requirements are similar to those of the other programs in the Department and lead to a B.F.A. degree in design. The Design area incorporates courses from related departments such as Environmen-



tal Design and Landscape Architecture. Individualized programs are possible through course offerings from art and design; however, the main professional sequence is structured toward Human Environment and Design, or Interior Design. The program is intended to meet professional standards set forth by the national, professional and educational associations in the field of design for accreditation and professional standing.

#### **Asian Studies**

There are majors leading to the B.A. in both Chinese and Japanese language and literature in which students may place emphasis on either modern or classical language. Students following either major receive a substantial foundation in reading, speaking and understanding the language, as well as a basic knowledge of respective literatures. Majors are encouraged to acquire a background in the history, government, society, religion, and arts of China and Japan.

In addition, various departments in the University and the Five College system offer courses dealing with specific aspects of China, Japan and other parts of Asia. Consult offerings of the Departments of Anthropology, Art, Comparative Literature, Geography, History, Political Science, and Sociology.

The program also offers, in cooperation with the Linguistics Department, two joint majors: Linguistics & Japanese and Linguistics & Chinese.

Undergraduates interested in Asian Studies may wish to enroll in the University's Asian Studies Certificate program. The program does not constitute a major and is designed to supplement the work done toward a bachelor's degree in another discipline. Requirements for the Certificate are a total of 24 credits selected from the Asian Studies course list.

#### **Classics**

Courses labeled "Classics" on the 100 and 200 levels are offered for purposes of general education. They require no knowledge of Latin or Greek; all readings are done in English translation. Courses of this type are offered in Greek and Roman civilization, ancient mythology, Greek and Roman archaeology, and Greek and Latin literature in translation.

There is also a special language skills

course in Greek and Latin elements in English designed to increase the student's knowledge and understanding of English vocabulary by study of the roots, prefixes, and suffixes incorporated into English from Greek and Latin. A full range of courses is offered in Latin language and literature.

A student who majors in Classics may choose one of the following areas of concentration: 1) Classical Civilization and Literature, 2) Greek, 3) Latin, 4) Mediterranean Archaeology, and 5) Religion. A description of each of these areas may be obtained from the Department of Classics. A separate interdepartmental major in Classics and Philosophy is available.

Classics majors may select any member of the Classics faculty as an adviser. Students with a special interest in secondary school teaching should consult Associate Professor Vincent Cleary. Those with a special interest in pre-seminarian studies should consult Assistant Professor Charles Isbell. Those interested in Mediterranean Archaeology should consult Assistant Professor Elizabeth Will.

The Department awards a scholarship of \$1,000 each spring semester to a Classics major for study at the Intercollegiate Center for Classical Studies in Rome.

Consult the Department for information about study programs in Italy and Greece during the academic year and the summer. The Department maintains a list of archaeological digs where students may receive training and experience in archaeological excavations.

#### **Comparative Literature**

Three different types of programs lead to the B.A. degree in Comparative Literature. The first involves the study of literature in two languages, a major and a minor; one of these may be English. Majors must also fulfill a requirement in a third language, preferably ancient, either by taking six credits of elementary course work or by passing the appropriate proficiency examination. A student has to take 42 upper-level credits of course work, not including the work done in the third language: 15 in the literature of the major language, 12 in the literature of the minor language, and 15 in Comparative Literature (including 3 directed toward the literature of the major language).



The second type of program involves the relation of literature studied in two different languages, a major and a minor (one of which may be English) to one other discipline (e.g., art, philosophy, anthropology, psychology, linguistics, sociology). The normal program will consist of 48 upper-level credits of course work, distributed as follows: 12 in the department of the related discipline, 12 in the major literature, 9 in the minor literature, and 15 in Comparative Literature. The third program involves the study of literature equally in two languages. The normal program will consist of 45 upper-level credits of course work, distributed as follows: 15 in the literature of one language, 15 in the literature of a second language, and 15 in Comparative Literature.

### English

The English Department offers courses which attempt to cover not only British and American literature but the literatures of all English-speaking people. English majors are encouraged to study creative and expository writing, folklore, film and other related subjects such as linguistics and journalism. Students who major in English are exposed to important literary works and are expected to develop those skills necessary to understand and evaluate literature as well as to express their opinions concerning it coherently and persuasively. All undergraduate programs in English are administered in the Department's Undergraduate Studies Office in Bartlett Hall. The Program in Journalistic Studies is also administered there. The Department's Chief Adviser is Donald Cheney, and the Director of Undergraduate Studies is Walker Gibson.

There are two options for majoring in English. Option A requires students to study various approaches to literature: one course in a pre-modern period; one course in literature not written in English; three of the four following kinds of literature: a course in language, a course in Shakespeare, a course in an individual author besides Shakespeare, and a course in a literary genre such as tragedy, lyric poetry or satire. Option B requires students to complete a survey of major authors: two courses in masterpieces of Western literature, two courses in major British authors, and one course in Shakespeare. Various

members of the Department are available to help students plan programs which focus on period studies, (such as Medieval or Victorian studies), American civilization, women's studies, film studies, folklore or a number of other areas. The English major must complete 30 credits in upper level courses (i.e., courses numbered above 200). Up to six of these credits may be substituted by upper level courses in related areas such as journalistic studies, linguistics, foreign language, comparative literature, or speech courses related to literature. All questions regarding what can be substituted should be directed to the Department's Chief Adviser.

Students who wish to graduate with Honors in English must take at least four upper level courses designated as Honors English courses, have a minimum cumulative average of 3.2, and choose to either write a thesis or take an additional two Honors English courses. Students who wish to be certified to teach English in secondary schools must apply to the Chairman of the English Education Committee.

### JOURNALISTIC STUDIES

Journalistic Studies is a program of the English Department offering a joint major with that department. The student is required to earn 15 credits in Journalistic Studies and to complete the requirements of the English major with some exceptions. Students interested in the Journalistic Studies Program should contact Professor Howard M. Ziff.

### French and Italian

#### FRENCH

Students planning to major in French have access to programs ranging from language skill courses at all levels to a rich body of courses devoted to literature and civilization. To supplement the major, requirements of which are outlined in several other brief documents, students are urged to take advantage of our overseas programs in Grenoble and Pau, or to spend their entire junior year in Paris under the auspices of the University of Massachusetts — Boston. Majors will also find living in French Corridor not only a successful way of learning spoken French outside of the classroom, but also an important introduction to life in France.

Special departmental advisers deter-

mine the major's proper placement within the department, help to formulate the future program of each student, and resolve academic problems.

For complete information concerning the major in French, please consult Professor Micheline Dufau, Chairman of the Department of French and Italian.

#### ITALIAN

Students planning to major in Italian have access to programs ranging from language skill courses at all levels to a rich body of courses devoted to literature and civilization.

Special departmental advisers determine the major's proper placement within the department, help to formulate the future program of each student, and help resolve academic problems. To supplement the major, requirements of which are detailed in other brief documents, students are urged to join an approved program in Italy for at least one summer.

For complete information concerning the major in Italian, please contact Professor Anthony Terrizzi, Undergraduate Adviser for Italian Studies.

#### Germanic Languages and Literatures

To fulfill undergraduate major requirements in German, a student must take German 161 and complete 32 credits in the department's junior-senior courses. Two programs are available: Program A (language) is designed principally for those who wish to teach in elementary or secondary schools or for those whose interest is not primarily in literature; Program B (literature) is for those who are chiefly interested in continuing their studies in graduate school.

Students selecting Program A should take 161, 201, 202, 211, 221 or 222, 241, 242, 283, 284, or 285, and a minimum of two more courses in German, one of which must be in 20th-century literature (331, 332, 333, or 334). Students in Program A who are not planning to follow a teaching career may substitute another junior-senior course for 283.

Students selecting Program B should take 161, 201, 202, 211, 221, 284, 321, 391, and three courses chosen from the following: 301, 302, 303, 311, 312, 313, 331, 332, 333, and 334.

Students are urged to augment their course work with at least one summer ses-

sion at an approved summer school of German or by participating in a German program abroad, such as the University offers in Freiburg, Germany.

#### History

History majors must take as required courses in their freshman and sophomore years two year-long sequences chosen from HIST 100-101 or 110-111, 115-116, 120-121, 130-131, 140-141 or 106-107, and 150-151 or 152-153. The history major will select one of five areas of specialization (European, British, American, Latin American, or East Asian history) and take within it a minimum of 8 courses numbered 200 and above (totalling not less than 24 credits). Students specializing in European history must take at least 3 credits in ancient or medieval history and an additional 3 credits in the early modern period (from the Renaissance through the 18th century). An additional two or three courses in electives outside the area of specialization are required, for a total of at least 12 courses (totalling not less than 36 credits) in lower and upper-level history courses.

#### Linguistics

Though it is a humanistic discipline, linguistics is best described as the science of human language. Linguists study the nature of the knowledge a human being possesses when one "knows" one's native tongue.

No undergraduate major is offered in Linguistics alone, but students may major jointly in Linguistics & Philosophy, Linguistics & German, Linguistics & Russian, Linguistics & Chinese, and Linguistics & Japanese. Courses in Linguistics also are counted for major credit in several departments, and are relevant to majors in English, the Foreign languages, Anthropology, Communication Studies, Psychology, Philosophy, and Computer & Information Sciences.

#### Music and Dance

The Music and Dance Department offers programs of study leading to the Bachelor of Music and Bachelor of Arts degrees. An audition is required of all applicants.

The Bachelor of Music degree is awarded upon completion of University core requirements and a concentration in one of three areas: Theory-Composition, Performance, and Music Education (Vocal

or Instrumental)). Each area of concentration consists of specialized courses in particular fields as well as a departmental core of applied music, theory, history and literature, and piano proficiency.

The Bachelor of Arts degree may be earned by the completion of University core requirements, additional College of Arts and Sciences requirements (language, humanities, and sciences), and a concentration in Music History, Theory-Composition, Performance, and Dance. The music core requirements are identical with those of the Bachelor of Music degree.

All programs contain course sequences in theory and applied music designed as four-year programs. A student not entering as a freshman may abbreviate his or her program only by advanced placement or by appropriate transfer credit.

The audition serves to determine the selection of the area of concentration as well as the qualification for music study. Instrumental Music Education applicants presenting piano or organ as a primary instrument must also present a strong secondary band or orchestral instrument. Vocal Music Education applicants presenting piano or organ as a primary instrument are also expected to meet voice study requirements.

Students not majoring in music may select non-specialized courses in music appreciation, music history, applied music (subject to prior audition), and participation in the performing groups.

Professor Horace Boyer is chief adviser for undergraduates.

### **Philosophy**

The Philosophy Department offers courses in all areas of philosophy at all levels, from the most elementary to the most advanced. Majors in philosophy take 30 credits in departmental courses. No particular course is required, but each major has to have one semester course (3 credits) in logic, one in ethics, and four in the history of philosophy. The 100-level courses may be counted in meeting these requirements.

Students with specialized interests can arrange independent study courses; and those with a B average or better can do honors work in their senior year.

The Department also offers a Teacher

Preparation Program designed for students who wish to teach philosophy in secondary schools. Three joint major programs in which philosophy is combined with classics or linguistics or mathematics, are also available.

Professor Gareth Matthews is Director of Undergraduate Studies and chief advisor for philosophy majors.

### **Slavic Language and Literatures**

The Russian major aims at maximal proficiency in all four language skills; for this reason, language study is the most significant component of the major program. Opportunity is also provided for the student to achieve a background in the literature and history of Russia, as well as to gain some competence in related areas of economy, political science, sociology and anthropology.

Department requirements for a major are the successful completion of:

a) Six semester courses of language study at the junior-senior level (18 credits): RUSS 261, 262, 271, 272, 281, 282.

b) Two semester courses of literature study at the junior-senior level (6 credits): RUSS 291, 292.

c) At least two additional courses within the department, to be chosen in consultation with an adviser on the basis of the student's post-graduate plans.

d) Two semester courses in Russian History: HIST 214, 215.

Majors and prospective majors should consult early and often with departmental advisers. Professor J. Joseph Lake is chief adviser for the department.

### **Spanish and Portuguese**

The department offers a major in Spanish and a number of courses in Portuguese. A major in Portuguese is planned.

All the department's programs stress training in and the use of language skills. Students are provided with opportunities to combine field work and community service with their academic programs.

The undergraduate major program consists of 42 junior-senior credits, up to nine of which may be in related areas and disciplines approved by the department. Entering Spanish majors who achieve an intermediate year level in the placement tests are urged to take SPAN 146, an intensive course which will permit them to start their Spanish concentration one semester



sooner than if they were to take SPAN 130-140, the usual intermediate course.

Prerequisites to a major in Spanish are SPAN 150-151, and 180.

Students may choose one of three areas of concentration for a major in Spanish. These areas are: A) Literature, B) Linguistics, and C) Bilingual Studies. All areas of concentration have as a common requirement two introductory literature courses and three courses in Conversational Spanish: SPAN 250, 251, 252 (one credit each). The successful completion of the following programs are required for each one of the designated areas of concentration.

1) Literature

- a) One course from the Medieval Literature group.
- b) One course from the Renaissance and Golden Age Literature group.
- c) One course from the 18th- and 19th-Century Literature group.
- d) One course from the 20th Century Peninsular Literature group.
- e) One course from the Spanish-American Literature group.
- f) Five electives.

2) Linguistics

- a) One course from the Medieval Literature group.
- b) One course from the Renaissance and Golden Age Literature group.
- c) One course from the 18th-, 19-, or 20th-Century Peninsular Literature groups or from the Spanish-American Literature group.
- d) Six courses from the Language and Linguistics group.

3) Bilingual Studies

- a) Two courses in Hispanic Culture.
- b) One course in Hispanic Literature of the Caribbean.
- c) Three courses that introduce the student to Hispanic linguistics, Caribbean dialectology, and history and theory of Hispanic bilingualism.
- d) Five electives.

**Theater**

Students in the program gain expertise in all the fundamental areas of theatrical art in graduated sequences of study designed to bring into focus rigorous critical think-

ing, precise methods of research, and imaginative expression in performance.

**SEQUENCE OF STUDY**

**Introduction to Theater**

Theater Practice (1 credit; may be repeated; 3 credits are required of majors)

**Basic Techniques (3 credits each)**

(Prerequisites: Introduction to Theater and at least 1 credit of Theater Practices)

Scenography

Dramaturgy

Performance

**Intermediate Techniques (9 credits each)**

(Prerequisite: completion of all basic techniques)

Scenography

Dramaturgy

Performance

In addition, students may elect up to 18 credits of advanced course work in scenography, dramaturgy, and/or performance when intermediate-level work has been completed in the corresponding area(s).

Freshmen who think they may wish to major in theater should elect Introduction to Theater, which also satisfies one of the four course requirements in the Humanities and Fine Arts core. (C).

Basic techniques in scenography, dramaturgy, and performance are normally completed during the sophomore year.

Non-majors with appropriate qualifications are welcome to participate in the activities of the Department. Department majors are given preference in placement at all levels within the program.

With the exception of Introduction to Theater and Theater Practice, enrollment in theater courses is by permission of designated department advisers only.

## **Faculty of Natural Sciences and Mathematics**

### **Biochemistry**

The Department of Biochemistry serves both a service function to other health and environmental and natural resource units on the campus as well as a source for the training of specialists in the area of molecular and cellular sciences. In addition, the major is an important training



ground for pre-med, pre-vet, and all pre-health science professions.

A student who is a potential major should take a year of chemistry and calculus in the freshman year. A year of exposure to the basic biological sciences is also strongly recommended either from high school or in the freshman year. A sample curriculum is outlined below.

#### Freshman Year

MATH 127-128 or 135-136 or 131-132

CHEM 113-114 or 111-112

ZOOL 190 or BOTANY 100 (if exempt, select from ZOOL 221, 227 or 240, or from an approved advanced Botany course)

Language (if exempt, a C or D core)

Rhetoric (if exempt, a C or D core)

#### Sophomore Year

MATH 255

Zoology, Botany or Microbiology

CHEM 165, 166, 167, 168 or 261, 262, 263, 264

Language or C or D core

PHYSIC 141-142

#### Junior Year

CHEM 210 or 127

CHEM 281-282

BIOCHM 223-224-226 (advanced section) C or D core

Electives (may include BIOCHM 385-386)

#### Senior Year

Advanced Biochemistry or Advanced Life-science or Advanced Chemistry

BIOCHM 338

BIOCHM 385-386 or 398-399

COINS 122 or 101

Electives (or core requirements)

#### Botany

Majors who plan to take post-graduate work in botany are assured excellent training in all fields of botany, including anatomy, cytology, ecology, genetics, morphology, taxonomy and physiology.

The department offers several courses without prerequisite which are designed for non-science majors.

Students planning for the botany major with subsequent graduate training in the field are required to take the following courses:

Botany: Introductory Botany, plus 24 additional credits in botany, including at least two courses from each of the following areas: I. Ecology — Evolution, II. Physiology — Cytology — Genetics, and III. Anatomy — Morphology — Systematics.

Chemistry: General Chemistry (111-112) and at least one semester of organic chemistry, and one semester of Biochemistry of Plant Metabolism BOTANY (212).

Mathematics: Either two semesters of Calculus (127-128) or two of the following: Finite Math (112), Introductory to Statistics (231), or Introductory to Computer Science (122).

Physics: Two semesters, either 141-142 or 121-122.

Genetics: Either BOTANY 240 or ZOOL 240.

The program for students seeking qualification for teaching at the secondary level must meet the following requirements:

Botany: Introductory Botany (100 or 101), the Plant Kingdom (125), Principles of Evolution (228), plus a minimum of 15 additional credits in botany including at least one course from each of the areas: I. Ecology — Evolution, II. Physiology — Cytology — Genetics, or III. Anatomy — Morphology — Systematics.

Zoology: Vertebrate Physiology (135).

Genetics: Either BOTANY 240 or ZOOL 240.

Chemistry: General Chemistry (111-112) plus one additional course in either Chemistry or Biochemistry.

Mathematics: Two semesters of Calculus (127-128) or two of the following: Finite Math (112), Introductory to Statistics (231) or Introductory to Computer Science (122).

Physics: Two semesters, either 141-142, or 121-122.

Additional requirements for teacher certification include elementary Psychology (101) and either Educational Psychology (301) or Adolescent Psychology (263), and the required course work and practice teaching in Education.

#### Chemistry

The Department of Chemistry offers two major curricula: The B.S. (with accreditation to the American Chemical Society), and the B.A. These curricula have been considerably revised to permit greater option in the selection of upper level courses.

The B.S. program is designed for students who wish to prepare for graduate study, or for research and/or development work in chemical laboratories. A slightly modified program permits preparation for

secondary school teaching, the B.A. program provides for students who wish to combine chemistry with another major area, as business for technical sales or management, or education for teaching, or pre-professional (medical, dental).

During the first three years of the B.S. curriculum, the student completes a chemistry core which includes CHEM 113, 114 (Principles of Chemistry); CHEM 165, 166, 167, 168 (Organic Chemistry with laboratory); CHEM 241 (Inorganic); CHEM 285, 286 (Physical); CHEM 210 (Analytical); CHEM 287 (Physical Lab); MATH 131, 132, 165 (Calculus); and PHYSIC 161, 162, 163 (a Calculus approach to Physics). It is recommended that German, Russian, or Japanese be selected to satisfy the College's language requirement, and that the student elect at least one course in other sciences and in computer science. The upper level chemistry requirement is three lecture courses, representing two of three designated groupings, and four laboratory courses, representing both of two designated groupings.

The B.A. program includes a core of CHEM 113, 114, 165, 166, 167, 168, 210, 241, 281, 282, (281, 282 are Physical Chemistry); MATH 131, 132; PHYSIC 141, 142. Two upper level chemistry lecture courses and one laboratory course complete the requirement.

A number of options and permitted substitutions are noted in a detailed description of the B.S. and B.A. curricula. It is extremely important that the student get initial and continuing advice from a Chemistry faculty member. Professor Richason is the Departmental chief adviser.

#### **Computer & Information Science**

The Department of Computer & Information Science offers a wide range of undergraduate courses in the areas of Computer Systems, Theory of Computation, and Cybernetics.

An increasing number of undergraduates, irrespective of their major, are finding it useful to have the ability to program and use modern computing equipment. They will find three courses (Introduction to Problem Solving Using the Computer; Assembly Language Programming; Comparative Programming Languages) very useful in getting experi-

ence with the time-sharing system at the University and mastering many available languages.

A number of courses introduce undergraduates to the design of computers, the design of compilers for communicating with computers in high level languages, and to new techniques for reducing complex problems to computer form.

Courses in automata theory, recursive functions, complexity of computation, and related topics introduce the student with a mathematical background to the many exciting problems posed by the theoretical study of computation.

"Foundations of Cybernetics" introduces the student to the computational study of artificial intelligence and brain function and to the design of robots; "Artificial Intelligence" surveys robotics, scene analysis, theorem-proving and planning, and language understanding by robots; and "Computational Population Dynamics" shows how mathematical techniques may combine with computer simulation in solving large-scale problems of ecological interactions. Other courses develop research on vision and memory from both a neurophysiological and robotic viewpoint; explore the design of question-answering systems etc.

Basic courses are offered for non-technical majors who desire a comprehensive insight into the uses and abilities of computers, and who desire a practical "hands-on" laboratory approach to their learning experiences.

While no formal undergraduate major exists in Computer & Information Science, one is being planned. Meanwhile, it is possible for students to seek a Bachelor's Degree with Individual Concentration, the program being worked out in consultation with the COINS Director of Undergraduate Studies.

#### **Geology & Geography** **GEOGRAPHY**

The program in geography emphasizes concepts and practical skills and techniques. Thirty credit hours in geography are required and include two introductory courses (145 and 155), two skills and techniques courses (240 and 250), four upper division courses (200-399), and two seminars (396 and 397). In addition, the student is required to take five courses in

other fields that supplement the student's interests and emphasis within the framework of the geography major. The courses are determined by the student and adviser.

Prof. Terence Burke is chief adviser for Geography.

#### **GEOLOGY**

A variety of undergraduate programs are available within three degree options: the B.A. degree, the B.S. degree, Geology Option, and the B.S. degree, Earth Science Option.

The B.A. degree is the most flexible, and is particularly suited for those not planning a professional career in the field.

The B.S. Degree, Geology Option, provides a strong background for those wishing professional careers in Geology.

The B.S. degree, Earth Science Option, is recommended for students interested in secondary teaching, or for students interested in future graduate work leading to the M.A.T. or M.S. Ed. degrees. This program involves extensive course work in other sciences.

The specific requirements in Geology and supporting subjects for each degree program may be obtained from the Department of Geology and Geography, or from the College of Arts and Sciences Information and Counseling Center (CASIAC). Thomas E. Rice is Chief Adviser for Geology.

#### **Mathematics & Statistics**

##### **MATHEMATICS**

The student electing mathematics as a major will find a variety of stimulating program options. Both Bachelor of Arts and Bachelor of Science degrees are offered.

All mathematics majors are required to complete a two-year sequence in calculus and linear algebra, or the equivalent. In addition, eight upper-division courses are required. These may be chosen from the department's offerings or from certain mathematics-related courses in other departments. Five of these upper-division courses must be taken in the form of two two-semester sequences in two of the areas of algebra, analysis, applied mathematics, and geometry and topology, and a one semester elective from a third of these areas. Students who have taken calculus in high school may be entitled to ad-

vanced placement; they should consult the mathematics placement counselor during summer counseling. Further detailed information about mathematics major requirements may be found in the Mathematics Major's Information Leaflet which may be obtained from the department.

The student interested in computer and data processing would probably take courses in computer and information science, logic, linear programming and possibly probability and statistics. The student aiming for a teaching career at secondary level might elect courses in geometry and number theory. A student interested in actuarial work would take courses in analysis and probability and statistics and also computer science. The student interested in industrial work would do well to take analysis and applied mathematics.

Students interested in statistics have an opportunity to take statistics courses for credit toward a major in mathematics.

Those planning on college level teaching or research in mathematics are urged to take a number of the "pure mathematics courses such as group theory, topology, differential geometry, and set theory.

Students who have demonstrated unusual mathematical ability in calculus will be invited to enter the departmental honors program.

##### **PROBABILITY AND STATISTICS**

The curriculum in probability and statistics is intended to develop student insight into the nature of scientific method, with emphasis upon statistical models of the experiment.

Students with training in calculus should elect MATH 247 — STATIS 248 or STATIS 315-316. Students without calculus who desire a thorough grounding in the concepts underlying statistics should elect STATIS 231 and 232. Those who wish merely to obtain more familiarity with elementary statistical ideas and techniques should elect STATIS 121 and subsequently STATIS 251.

Any of the three courses STATIS 121, 231, or 315 serve as prerequisites for analysis of variance (STATIS 251), design of experiments (STATIS 261, STATIS 262), sampling theory (STATIS 271), and multivariate analysis (STATIS 281, STATIS 282).



There is at present no undergraduate major in statistics. Those who intend to study statistics at a graduate level should concentrate on mathematics and elect courses in computer science. Advanced courses in statistics require a background of at least two years of calculus and preferably MATH 225, Advanced Calculus and MATH 211-212, Abstract Algebra.

The Statistical Laboratory is open to students.

### **Microbiology**

Microbiology majors should immediately begin preparation in chemistry. Microbiology majors are required to have broad training in collateral sciences, and minimum requirements include chemistry through quantitative analysis and organic, and one year each of introductory biological science, physics, and mathematics. MICBIO 250, 251, 280, 340, senior seminar, and elective courses contributing to a total of at least 20 credits in microbiology are required of majors. Professor S. C. Holt is departmental chief adviser.

### **Physics & Astronomy**

#### **ASTRONOMY**

The Five College Department of Astronomy is administered jointly with Amherst, Hampshire, Mount Holyoke, and Smith Colleges. The elementary courses for non-majors are taught separately at each campus but all advanced courses are given on a joint basis for students from the five participating institutions. Five College courses are identified in the Undergraduate Catalog by ASTFC. The Astronomy Program at the University is also a part of the Department of Physics and Astronomy.

Students who plan to go to graduate school should obtain a firm foundation in physics and mathematics and should plan to finish satisfactorily the introductory physics and mathematics sequences and ASTRON 222-223 by the end of the Sophomore year.

More flexibility in planning courses is available to those majors for whom the B.A. or B.S. will be a terminal degree in astronomy. In some circumstances PHYSIC 142 and ASTRON 101-102 will be acceptable lower division courses. A minimum of three upper division astronomy courses and nine additional

credits of upper division astronomy or physics must be satisfactorily completed. These may include ASTRON 231 and 234 but should be chosen in consultation with the Chief Adviser.

Those students wishing a B.S. rather than a B.A. degree need a total of 60 credits of science courses. The credits required beyond those explicitly needed for the astronomy major may be chosen from any science or behavioral science.

Independent and honors work are encouraged for all majors. Opportunities for theoretical and observational work are available in cosmology, cosmogony, radio astronomy, planetary atmospheres, relativistic astrophysics, laboratory astrophysics, gravitational theory, infrared balloon astronomy, stellar astrophysics, spectroscopy, and exobiology. Facilities include the Laboratory for Infrared Astrophysics, balloon astronomy equipment (16-inch telescope, cryogenic detectors), the Five College Radio Observatory, access (under supervision) to the 120-foot NERO radio antenna, and a modern 24-inch Cassegrain reflector. Opportunities for summer research are also frequently available including an exchange program with the Observatory of Bonn University. Original publications often result from undergraduate research.

Professor J. Taylor is the Chief Adviser for Astronomy.

#### **Sample Program I —**

##### **Freshman Year:**

Rhetoric, MATH 131, 132, PHYSIC 161, Electives.

##### **Sophomore Year:**

PHYSIC 162, 163; MATH 165, 231; ASTRON 222, 223; Electives

##### **Junior Year:**

ASTRON 237, 234; PHIL 230, ASTRON 386, PHYSIC 200, Electives.

##### **Senior Year:**

ASTRON 385, PHYSIC 301, MATH 200, Ed. Psych., Elective, Ed. Block.

#### **Sample Program II —**

##### **Freshman Year:**

Rhetoric, MATH 131, 132; PHYSIC 171, 172 (162); Electives.

##### **Sophomore Year:**

MATH 165, 231; PHYSIC 173; ASTRON 222, 223, Electives.



#### Junior Year:

Mechanics, Electricity, Modern Physics, Thermodynamics, MATH 241, 242; ASTRON 238; Electives.

#### Senior Year:

ASTRON 343, 344; Electives.

#### Physics

For the liberal arts student a variety of one and two semester courses is available. PHYSIC 114 is of special interest to Communication Disorders majors, 115 to Music majors, and 130 to Elementary Education majors. PHYSIC 110, 116, 117, 118, 119 and 169 consider topics in the world beyond our senses, relativity, nuclear energy, quantum physics, contemporary applications of physics, and science for science fiction readers respectively. PHYSIC 121-122 provides a broader view of the ideas and concepts of physics for the non-science student.

PHYSIC 141-142 serves the needs of life science majors, including pre-med, physics majors. 161-162-163 provides the necessary background for majors in Engineering, Chemistry, Physics, Astronomy, and other Physical Science fields. Students with special interest and facility in Physics and Mathematics, especially prospective Physics or Astronomy majors, should elect the 170 series, the Honors version of the 160 sequence. Prospective majors with high school math deficiencies may take 100 or 116 while completing the mathematics prerequisites for the introductory sequences. They are also urged to take 185, the freshman colloquium.

All courses numbered 171 or higher are tentative, although substantial changes are not expected.

Majors are normally required to take MATH 131, 132, 165 or 127, 128, 132, 165, a year of a science outside physics, and 18 credits of upper division physics courses. These are 220 (Physical Electronics) or 222 (Intermediate Electricity and Magnetism), 221 (Mechanics) or 225 (Biophysics), 223 (Thermal Physics), 224 (Modern Physics) or 301 (Applied Modern Physics I), and two advanced lab courses. The latter may be chosen from 205 (Intermediate Laboratory), 320 (Radiation Physics), 321-322 (Electronics for Scientists), 376-377 (Advanced Lab). (ASTRON 237 or 238) may be substituted for one of these labs. PHYSIC

201 (Introductory Applied Physics) and 202 (Techniques of Theoretical Physics) are recommended but not required. These requirements may be completed in as little as two years, but the breadth obtained by taking additional courses requires additional time.

The student interested in physics as a profession will normally elect several advanced physics courses plus math courses such as 241-242 (Applied Analysis), 231 or 331 (Differential Equations) and 167 (Linear Algebra).

Students are encouraged to contact the department for further details. Professor M. M. Sternheim is the Director of Undergraduate Studies.

#### Zoology

The Zoology Department offers a variety of general interest courses in ecology, behavior, natural history, genetics, and physiology.

For students who decide to major in zoology, the curriculum provides the basic concepts and allows for individual interests. Zoology majors should complete ZOOL 240, Principles of Genetics; ZOOL 360, Cell Physiology; and one course from each of the following groups.

Vertebrate zoology: ZOOL 221, Comparative Anatomy; ZOOL 223, Histology or ZOOL 227, Embryology.

Invertebrate zoology: ZOOL 281, Biology of the Invertebrates; ZOOL 282, Biology of the Invertebrates or ZOOL 283, General Parasitology.

Ecology, Population, Behavior: ZOOL 243, Population Biology; ZOOL 335, Limnology; ZOOL 337, Ecology or ZOOL 350, Animal Behavior.

Physiology, Development: ZOOL 366, Vertebrate Physiology; ZOOL 370, Comparative Physiology or ZOOL 380, Developmental Biology.

Background knowledge aids understanding of zoological ideas; thus, additional requirements are: BOTANY 100, Introductory Botany; PHYSIC 141/142, Introductory Physics and MATH 127/128, Calculus for the Life and Social Sciences.

Students contemplating a major in zoology should also enroll in CHEM 111 their first semester in order to anticipate those zoology courses which have general chemistry (CHEM 111/112), organic

chemistry (CHEM 261/262 with laboratory), or biochemistry (BIOCHM 220 or 223) as prerequisites.

Students may substitute for MATH 127/128 either of the following sequences: STATIS 231/232; Fundamentals of Statistical Inference; or COINS 122, Introduction to Problem Solving, plus a second COINS course for which 122 is a prerequisite. Other substitutions are possible. For example, students with a strong interest in chemical biology may, with the permission of the Chemistry Department, substitute CHEM 113/114 for CHEM 111/112; those with a special interest in physics may wish to substitute PHYSIC 161/162/163 for PHYSIC 141/142. The Bachelor of Science degree requires a total of 60 credits in natural science, mathematics, or psychology. A few courses elected from these areas will bring a zoology major's program to the 60-credit level.

ZOOL 101, Introductory Zoology, is currently not required of zoology majors, but the faculty is preparing a first course in zoology (ZOOL 102) for its majors which will be required.

The curriculum for those who plan to become certified secondary school biology teachers is somewhat broader. Additional botany courses (BOTANY 125 and 126), and several psychology and education courses, as well as practice teaching, provide the needed background. Also ZOOL 135, Introductory Physiology, may be substituted for the last group of zoology courses listed above. Students are urged to contact the Science Education adviser in the School of Education early in their academic careers.

## **Faculty of Social and Behavioral Sciences**

### **Anthropology**

Anthropology majors must take ANTH 104 and one other of the following introductory courses: 102, 103 or 105. They should also take at least one other course in the social and behavioral sciences (either Sociology, Economics, Political Science or Psychology). All majors must elect a minimum of 30 credits in Anthropology, with at least 21 of these credits chosen from courses above the 100 level. The maximum acceptable credits in

Anthropology is 45. Students choosing Anthropology as a major are also required to take a course in quantitative methods selected from a list available from the department. Professor Donald Proulx is chief adviser for Anthropology.

### **Communication Studies**

Majors are required to select one of the following areas of concentration: 1) Interpersonal Communication and Rhetoric, recommended for students who plan to work as communication specialists in business, government or education, who wish to pursue careers in law, public affairs, politics and similar professions, or to prepare themselves for graduate study in Interpersonal Communication and Rhetoric; 2) Mass Communications, recommended for students who plan to pursue careers in mass media or mass media-related industries, or to prepare themselves for graduate study in Mass Communications; 3) Communication Education, required of all students who plan to earn a secondary school teacher's certificate in Speech Communication.

### **Economics**

Courses are offered in such topics as economic theory, international trade, industrial structure and regulation, labor economics and human capital, mathematical economics, economic history, lesser developed economies, comparative systems, regional and urban economics, public finance and history of economic thought.

A student who wishes a basic understanding of economics or completion of a (D) distribution requirement will probably take ECON 100, Elements of Economics. A student interested in a particular topic may take ECON 121, International Trade; ECON 131, Insecurity and Poverty; ECON 141, Labor Problems; ECON 172, The Soviet Economy; or ECON 181, Urban Problems; all of which presume no previous economics courses. A student expecting to take more than one economics course should begin with ECON 103, Microeconomics and continue with ECON 104, Macroeconomics. A student interested in developing economic tools of analysis further for a career in business or systems analysis, for example, can take ECON 203 and 204 after the two introductory courses.

Along with University and college re-

quirements the department requires majors to complete 24 credits in economics which must include 103, 104, 203, 204, and at least four other courses of the 200 or above level. The only other requirement is one of calculus such as 127, 131, or 135, or 190-290 so that students have some familiarity with the language in which so much of modern economics is conducted.

### **Political Science**

Courses in Political Science are broadly grouped into the fields of Political Theory, American Politics and Public Law, State and Local Politics and Public Administration, Comparative Politics and Area Studies, and International Relations.

The Political Science Department offers three introductory courses: 101 American Politics; 131 Comparative Politics, and 151 World Politics. Any of these courses meets the University requirement of an introductory course in social science. Political Science majors are required to take two of the above three courses.

Majors in Political Science are normally expected to complete the basic courses in their freshman or sophomore years. A minimum of nine additional courses is required. At least one course must be selected from each of the five fields: political theory, American politics and public law, state and local politics and public administration, comparative politics and area studies, and international relations. Any four additional Political Science courses will complete the Departmental distribution.

### **Psychology**

Course offerings in Psychology permit students to pursue various aspects of the subject to differing levels of depth, and to pursue programs of study which lead to either the B.A. or the B.S. degree.

Students interested in majoring in psychology should elect PSYCH 120, 130, 140, and 145.

The psychology major must elect the following: a minimum of 24 (and no more than 40) credits of advanced level courses in the Department. Included in the electives must be at least two courses from each of the following two groupings: A) 210, 220, 230, and 250; and B) 260, 270, and 280.

In addition, students interested in a

career in Psychology should plan to elect at least one laboratory course from each of the following groupings: A) 211, 221, 222, 231, and 251; and B) 261, 271, 281, and 282. These laboratory electives must be taken in proper sequence with their associated non-laboratory prerequisites or corequisites.

NOTE: Students electing the B.S. degree must fulfill the additional science requirements of the College. Students should discuss the available options with the Undergraduate Advising Office in Tobin Hall.

Professor Stanley Moss is Director of Undergraduate Studies.

### **Sociology**

The department offers a number of introductory courses at the 100-level, including: a) Contemporary American Society; b) Age, Sex, and Kinship in Contemporary Society; c) Social Problems; d) Drugs and Society; e) Sociology of Learning; Problems of Personal and Social Change; f) Urban Life and Industrial Society; g) Race, Sex and Social Class: Inequality in America; and h) Self, Society, and Interpersonal Relationships.

The sociology major requires a minimum of 27 credits or nine courses distributed as indicated below. No major is permitted to take more than a total of 36 credits or 12 courses in sociology.

Each major is required to take both SOCIOL 201 (Sociological Analysis I; Theories and Perspectives) and SOCIOL 202 (Sociological Analysis II: Data Collection and Analysis). These courses should be taken during the sophomore year. At least one sociology course, preferably at the 100-level, is a prerequisite for 201 and 202.

In addition to 201-202, each major is required to take at least one upper division course in three of the following five core areas, and no more than three courses can be taken for credit toward the major in any one core area. Core areas include: Social Organization and Institutions; Social Issues and Policies; Demography and Urban Sociology; Social Psychology; and Theory and Methods.

Professor Robert Faulkner is the departmental chief adviser. Mr. William D. Bathurst is information officer for sociology majors.



## Interdisciplinary Programs

### Classics & Philosophy

The Classics & Philosophy major is administered jointly by the two departments. It is designed for classicists with a philosophical bent and philosophers with an interest in Greek.

#### REQUIREMENTS

- 8 hours of credit in elementary and Intermediate Greek
- 6 hours of credit in Greek Readings
- 6 hours of credit in Classics
- 6 hours of credit in Philosophy
- 6 hours of credit in Ancient Philosophy
- 6 hours of credit in Special Classics and Philosophy
- seminars taken in the junior and senior years.

Questions may be directed to Professor Gareth Matthews, Philosophy Department; and to Professor Robert Dyer and Professor John Marry, Classics Department.

### Judaic Studies

Director of Judaic Studies and chairman of the committee is Professor Leonard H. Ehrlich. Student inquiries about any academic aspect of the program, such as the major, individual courses, or study abroad, may be directed to him or to the Director of Student Affairs, Professor Leora Baron.

Students who want to major in Judaic Studies must complete the following requirements:

- (a) Hebrew: One year introductory and one year intermediate Hebrew, or equivalent. Two semesters of Hebrew courses numbered 150 or above, or equivalent.
- (b) JUDAIC 100, 101 (The Jewish People, I and II).
- (c) 18 hours in courses, approved by the Judaic Studies Committee, numbered 200 or above. This requirement is in addition to (a) above.
- (d) The major student will devote no fewer than 9 of these 18 hours to an area of concentration approved by the Judaic Studies Committee. 6 approved areas are: Biblical Studies, History, Hebrew Language and Literature, Modern Literature, Religion, Area Study.

Entering freshmen who decide to take a

major in Judaic Studies are strongly advised to enroll in Hebrew in the freshman year.

### Latin American Studies

The University's Latin American Studies Program does not constitute a major and is designed to supplement the work done in another discipline. Those students who fulfill the requirements of the program are awarded the Certificate in Latin American Studies attesting to their attainment in area and language studies.

Requirements for the Certificate in Latin American Studies:

#### TRACK A

##### 1) Languages

(a) Students must demonstrate a practical working knowledge of Spanish or Portuguese.

(b) Completion of a one-year course in the other language (Spanish or Portuguese) with a grade of at least C.

##### 2) Area Studies

Successful completion (with a grade of C or better) of four courses in Latin American Studies selected from three distinct disciplines.

##### 3) Inter-disciplinary Courses

All students must take the Seminar on Latin America (LAT AM 390). They may also want to take LAT AM 392 — Bibliography for Latin American Studies.

#### TRACK B

##### 1) Languages

Students must demonstrate a practical working knowledge of Spanish or Portuguese.

##### 2) Area Studies

Successful completion of five courses in Latin American Studies selected from at least three distinct disciplines.

##### 3) Inter-disciplinary Courses

Students must complete both LAT AM 392, Bibliography for Latin American Studies, and LAT AM 390, Seminar on Latin America.

The Committee on Latin American Studies administers the program and advises interested students. Committee members for 1974-75 were:

Professor Robert A. Potash, Chairman (History)

Professor Howard A. Wiarda (Political Science)



Professor Robert Bancroft (Spanish and Portuguese)  
Associate Professor Donald A. Proulx (Anthropology)  
Associate Professor Richard W. Wilkie (Geography)  
Associate Professor Michael Best (Economics)

**INTERDISCIPLINARY MAJORS IN LINGUISTICS**

The Department of Linguistics offers five interdisciplinary majors: Linguistics & Philosophy, Linguistics & Chinese, Linguistics & German, Linguistics & Japanese, and Linguistics & Russian.

Students interested should first see the undergraduate adviser in Linguistics. Students wishing to pursue a joint major in linguistics and other disciplines (for example, Linguistics & English, Linguistics & Psychology, Linguistics & Anthropology, or Linguistics & Computer Science) should also see the undergraduate adviser in Linguistics. Joint majors in these fields have in the past been approved through the Bachelor's Degree with Individual Concentration.

Questions may be directed to Professor Donald Freeman, Linguistics Department.

**Linguistics & Philosophy**

**Prerequisites:** Two years (or equivalent) of a foreign language to be taken before the junior year, plus 42 semester hours of credit distributed between philosophy and linguistics, and including each of the above or equivalent.

**Linguistics & Chinese**

**Prerequisites:** Successful completion of four semester courses in Chinese (24 credits): CHINSE 126, 146, 226, 227 or equivalent. Thirty-five credits distributed between Linguistics and Asian Studies.

**Linguistics & German**

**Prerequisites:** Successful completion of four semester courses in German (12 credits): 110, 120, 130, 140, or equivalent. Thirty credits distributed between linguistics and German such that at least 14 credits are earned in courses bearing German numbers over 200.

Students will be encouraged to take graduate courses in the older Germanic languages for undergraduate credit and may also opt to take courses in German literature or civilization courses and/or

language courses in Danish, Dutch, Swedish.

**Linguistics & Japanese**

**Prerequisites:** Successful completion of four semester courses in Japanese (24 credits): JAPAN 126, 146, 226, 227 or equivalent. Thirty-five credits distributed between Linguistics and Asian Studies.

Other courses may be selected from the course list of the Five College Asian Studies program.

**Linguistics & Russian**

**Prerequisites:** Successful completion of four semester courses in Russian: RUSS 110, 120, 130, 140 or equivalent. Thirty credits distributed between Linguistics and Slavic Languages, and including at least 18 credits earned in courses bearing Russian catalog numbers. The language courses taken as a prerequisite to the major may be counted towards these 18 credits, which are required for state certification, but not toward the major.

Courses may be selected from the offerings of the Slavic languages departments in the Five College area.

**Mathematics & Philosophy**

**Requirements:** A minimum of 36 semester hours of credit in courses offered in the two departments. Satisfaction of the following requirements of distribution:

(a) *The Mathematics Requirement.* Satisfactory completion of MATH 136, 167, and four other courses from among 165 (or 166), and courses numbered above 200, including a two-semester sequence.

(b) *The Philosophy Requirement.* Satisfactory completion of any three courses from among PHIL 161, 162, 201, 205, 230, and 261. Satisfactory completion of PHIL 374 and one other course numbered above 200.

COINS 285 may be taken in partial fulfillment of requirement (a) or requirement (b) (but not both).

(c) *The Logic Requirement.* Satisfactory completion of MATH 381 or both of PHIL 372 and 373. (Note: These courses count toward satisfaction of requirements (a) and (b), respectively.)

For further information, see Professor Michael Jubien, co-director of the program for Philosophy, or Professor Frank Wattemberg, co-director for Mathematics.

### Near Eastern Studies

The University of Massachusetts, Amherst, offers an interdisciplinary and interdepartmental major in Near Eastern Studies. The major is administered by the following members of the Near Eastern Studies Committee, under the chairmanship of Professor Vartan Artinian of the Department of Classics (737 Herter Hall: telephone 545-0513):

Leora Baron, Department of Classics, 529 Herter Hall, 545-0543

Jack Benson, Department of Art, 323A Bartlett Hall, 545-2659

David Biddle, Department of History, 707 Herter Hall, 545-0672

Walter Denny, Department of Art, 229C Bartlett Hall, 545-2729

Charles Isbell, Department of Classics, 540 Herter Hall, 545-0543

George Kirk, Department of History, 617 Herter Hall, 545-0547

Archibald Lewis, Department of History, 604 Herter Hall, 545-0630

Leila Meo, Department of Political Science, 338 Thompson Hall, 545-0413

Edward Phinney, Department of Classics, 533 Herter Hall, 545-0514

Niki Stavrolakes, Department of Classics, 542 Herter Hall, 545-0542

Students majoring (or planning to major) in Near Eastern Studies may consult any of the above members of the Committee for help in arranging programs of study. Professor George Kirk is chief adviser for Near Eastern Studies majors. The major consists of a minimum of 24 upper level credits in courses chosen from an approved list. The complete list is published by the Five College Coordinator and may be obtained from Professor Artinian. Near Eastern Civilizations I and II, and two years or the equivalent of a Near Eastern language (Arabic, Armenian, Hebrew, Persian, Turkish) are required. Students should begin the major by taking NEAST 100 and Near Eastern language course. Those wishing to concentrate in the area of ancient Near Eastern studies may arrange to study Akkadian, Aramaic, and Ugaritic with Professor Charles Isbell. Students are urged to spend a summer, a semester, or a full academic year in the Near East (please see Professor Vartan Artinian, David Biddle, George Kirk, or Leila Meo for available programs).

### Pre-Dental, Pre-Medical, and Pre-Veterinary Programs

A student planning to enter a dental, medical, optometry, podiatry, osteopathy, or veterinary school should select a major department in the field of greatest interest. This will usually be in the College of Arts and Sciences, but may be in other colleges or schools. Pre-veterinary students frequently select a major in the College of Food and Natural Resources. Preparation for the professional schools requires relatively few specific courses beyond those necessary to obtain the bachelor's degree.

Minimum preparation for the pre-professional student must include one year of inorganic, one year of organic, and one semester of analytical chemistry, three semesters of biology, one year of college mathematics, and one year of physics. Certain additional courses in biology, chemistry, or mathematics may be required or recommended by some dental, medical, and veterinary schools. Students should consult their advisors as well as professional school catalogs in regard to specific requirements of particular schools. Freshmen who intend to include the pre-professional courses in the curriculum should discuss their plans with the summer counseling adviser, as some change in the normal course sequence may be desirable.

Students, who by their work in the first year demonstrate a potential for success, may, in their third semester, apply to the Pre-Professional Advisory Committee for entrance into the pre-medical, pre-dental, or pre-veterinary major.

A library of dental, medical, optometry, osteopathy, podiatry, and veterinary school catalogs and other pertinent material is maintained in the committee office, Room 206 Goessmann.

Individual members of the advisory committee are available for counsel to all interested students. The committee membership for 1975-76 consists of 17 faculty members from Natural Sciences, Psychology, Health Sciences and Food and Natural Resources. Dr. W. Brian O'Connor, Associate Professor/Zoology is Chairman of the Committee.

### Science Major

This is an interdepartmental major, based on courses in the departments of the Fac-

ulty of Natural Sciences and Mathematics (Biochemistry, Botany, Chemistry, Computer and Information Science, Geology, Mathematics/Statistics, Microbiology, Physics/Astronomy, and Zoology). The major is coordinated and administered by a committee composed of the chief undergraduate advisors of these departments, a representative of the Pre-Med committee, and the assistant dean of Natural Sciences & Mathematics. The major is intended for the student who has a broad interest in sciences but does not wish to specialize, and has requirements in the areas of foundational work, depth, and breadth.

In the foundations area the requirements are: (1) two courses from Math or COINS (Computer and Information Science) or Statistics; (2) two courses from each of Physics and Chemistry plus one more from Physics, Chemistry or Geology; and (3) two courses from the departments of Biochemistry, Botany, Microbiology, or Zoology.

The depth requirement consists of a primary concentration of at least six courses in one department and a secondary concentration of at least four courses in another department in NS&M, with the primary concentration including at least four upper division courses.

To complete the major, the breadth requirement calls for a total of 20 courses chosen from at least six of the nine NS&M departments. For more detailed information contact CASIAC or any member of the coordinating committee.

#### **Social Thought & Political Economy**

The Social Thought & Political Economy program is an interdisciplinary major that combines related offerings of the following departments: Anthropology, Economics, History, Philosophy, Political Science, Psychology, and Sociology.

Students choose a concentration either in Social Thought or in Political Economy.

#### **Requirements**

- (a) 12 hours of credit at the introductory level in at least three of the departments listed above;
- (b) 18 hours of credit in courses numbered 200 or above, selected in consultation with the adviser, from the offerings of the departments listed above;
- (c) 6 hours of credit in a two-semester

senior year team-taught seminar restricted to the STPEC majors.

For more information, contact Karen Warren, in the Office For Interdisciplinary Studies, housed in CASIAC, Machmer Hall.

#### **Soviet and East European Studies**

This program provides an opportunity to study the Soviet and East European area from the perspective of several academic disciplines. Requirements for a major are:

1) Proficiency in a relevant language (usually Russian) at a level adequate to enable the student to conduct research in that language;

2) Successful completion of 10 courses dealing with the area in a minimum of three disciplines to be chosen from Anthropology, Economics, History, Political Science, Slavic Languages and Literatures, and Sociology;

3) Two courses in modern European history.

The Committee on Soviet and East European Studies administers the program. Members are: Zdenek Salzmann (Anthropology); Paul Hollander (Sociology); Robert Jones (History); Maurice I. Levin (Slavic); Stanley Radosh (Slavic Bibliographer); Karl Ryavec (Political Science) and J. Joseph Lake, Chairman. Questions regarding the details of this program may be obtained from the Department of Slavic Languages and Literatures, Herter Hall 438, or from Professor Karl Ryavec, Department of Political Science, Thompson Hall.

#### **Western European Area Studies**

The Western European Area Studies Program is an informal "minor" which complements a wide variety of departmental majors.

The requirements for the Western European Studies (WEST) Certificate are: 1) a minimum of one upper-level course in each of three disciplines relating to Western Europe beyond the designated major; 2) at least one interdisciplinary seminar given under the auspices of the WEST program (WEST 291 or 391); 3) a working knowledge of one modern Western European language (normally 18 credits) in addition to English (a reading knowledge of a second foreign language is recommended). These requirements may be met by courses taken at the University, at one



of the four institutions in the Five College system, or in one of the overseas programs.

Students should design their programs in consultation with their departmental advisor.

WEST Executive Committee, 1975-76: Eric Einhorn (Political Science), Director; Paul Mankin (French), and Marvin Swartz (History).

## **School of Business Administration**

The first two years emphasize general education by providing fundamental courses in the humanities, communication skills, mathematics, and the social sciences. In addition, basic courses in accounting, economics, computer science, and business law prepare the student for further work in the School of Business Administration. The junior and senior years emphasize a greater degree of specialization. The "core" consists of introductory courses in Finance, Marketing, and Management. Each course of study leads to a degree of Bachelor of Business Administration.

Students who intend to transfer from junior or community colleges should complete the program in liberal arts and not register for courses in Business Administration, except Principles of Economics and Elementary Accounting.

The School of Business Administration is a member of the American Association of Collegiate Schools of Business.

**Freshman Year:**

**First Semester:**

RHET 100(C), MATH 120, ECON 103, Non-Business Elective, Humanities Elective (C)

**Second Semester:**

RHET 110 (C), MATH 121, ECON 104, Non-Business Elective, Elective.

### **Accounting**

Students majoring in accounting may concentrate their study in one of several career areas:

- a. public accounting
- b. information systems
- c. management accounting and
- d. a general program which provides

flexibility for students to meet specific individual career goals.

### **General Business and Finance**

The department offers five programs of study and other specifically designed programs for those students who wish to combine Business Administration with a related field of study outside the School of Business Administration. The five are in Financial Management, General Business, Business Economics, Management Science, and Urban and Regional Studies.

### **Management**

Courses normally include such topics as management practices, personnel policies, manpower planning, social responsibilities of business, labor and industrial relations, the uses of computers in organizations, and theories of organizational behavior.

### **Marketing**

The department's objective is to provide a specialized and comprehensive understanding of today's managerial marketing problems, whether they pertain to the business sector or marketing-conscious nonprofit organizations.

## **School of Education**

The School of Education is committed to developing alternative educational programs to address significant educational issues in contemporary American society. The undergraduate program focuses on teacher education for both elementary and secondary certification.

Clusters are the basic academic unit of the School, operating as focal points for the various teacher education programs. Presently the clusters are: Designs for Effective Learning, Division of Educational Planning and Management, Division of Humanistic Applications of Social and Behavioral Sciences in Education, Educational Policy Studies, and Transdisciplinary Education.

An integral part of the academic program is the administrative/instructional procedure called Flexible Curriculum, based on the philosophy that alternative instructional formats provide an improved potential in the effectiveness and responsiveness of a total curricular program.



Each Learning Experience carries an agreed-upon number of modules of credit on an accumulating basis. One hundred modules is equivalent to 1 University credit. There also exists significant opportunity for individualized study, including independent studies and practica.

All teacher education programs leading to certification are coordinated and approved through the Teacher Education Council (TEC). There are over a dozen alternative programs currently available for candidates in elementary or secondary teacher education, many of which have inservice as well as preservice components. Placements for field work are available in a wide variety of locations ranging from areas in Western Massachusetts to international locations.

All students seeking certification must enroll in a TEC program. Those students majoring in Education but whose career plans do not include teaching, may develop a non-teaching major within the School.

Students are encouraged to inquire at the Education Advising Office, 125B School of Education.

## CLUSTERS

### **Designs For Effective Learning (DEL)**

The students, staff and faculty of this cluster share the following commitments:

- 1) Learning through experience — to create institutional means for a reality-based education.
- 2) Learning throughout life — to create models for open-ended education for all involved in the education process.
- 3) Learning to change — to enable schools, programs, and institutions to adapt through continuous self-renewal.
- 4) Learning through diversity — combating institutional and personal racism.
- 5) Creating a new design for higher education — to evolve an institutional model.

### **Division of Educational Planning and Management (DEPM)**

The Division of Educational Planning and Management cluster is comprised of six academically oriented sub-units. These are the Center for Curriculum and Organization (CCO), the Center for Educational Research (CER), the Clinic to Improve

University Teaching (CIUT), the Center for Leadership and Administrative (CLA), the Center for Occupational Education (COE), and the Academic Disciplines Program: Science and Social Studies.

To confront problems in schooling at a fundamental level, the Center for Curriculum and Organization prepares its members to focus on the teacher-learner encounter in schools.

The Center for Educational Research specializes in research, development, dissemination, and evaluation work within the context of professional education.

The Clinic to Improve University Teaching assists faculty members in improving the quality of instruction offered.

The Center for Leadership and Administration seeks to provide opportunities for each student to enhance his/her qualifications to assume important leadership positions in education.

The focus of the Center for Occupational Education is to instill quality and professionalism into teaching in occupational education; to thoroughly equip and train teachers in specific occupational areas, to develop leadership and administrative abilities in occupational educators; and, through related research, to develop new and relevant occupational programs.

The Academic Disciplines Program (Science and Social Studies) prepares students from other academic departments for careers as secondary science or social studies teachers.

### **Division of Humanistic Applications of Social and Behavioral Sciences in Education (HAPPS)**

This cluster seeks to assist people in their historical and ontological vocation of becoming more fully human by applying the social and behavioral sciences directly to the education of individuals and to the transformation of the institutions that facilitate or impede human development. Change methods vary from individual counseling and therapy to group methods for deliberate psychological education to organizational development strategies for changing larger social systems. The settings in which these methods are applied also vary widely from schools, mental hospitals and prisons to detention centers, half way houses, community mental health centers, drug education units.

### **Educational Policy Studies (EPS)**

The major focus is on attaining greater understanding of the educational process.

EPS operates via systematic, theory-based investigation and action. Experiments which test a theory, action projects which apply theory, and conceptual investigations which develop and combine theories are highly encouraged. Ultimately the concern of EPS is to bring systematic knowledge to bear on matters of public policy and particularly those aspects of public policy which effect the formulation and modification of educational policy.

### **Transdisciplinary Education (TD)**

The Transdisciplinary Education cluster offers study of transdisciplinary topics such as perception, rhetoric, and movement. This cluster concentrates on training in the fields of bilingual/bicultural education, communication arts (arts and humanities, reading and media), special education, and transdisciplinary education/alternative schools. Participants in Transdisciplinary Education cluster programs often utilize the resources in the four other clusters in the School of Education.

### **Human Development**

Students interested in Human Development should contact the Early Childhood Education Program in the Educational Policy Studies cluster.

## **School of Engineering**

The School of Engineering offers curricula in Chemical Engineering, Civil Engineering, Industrial Engineering and Operations Research, Electrical and Computer Systems Engineering, and Mechanical Engineering. Each of the curricula leads to the Bachelor of Science degree. All curricula are accredited by the Engineers Council for Professional Development.

The curricula in engineering offer sound training in mathematics and basic chemistry and physics. About 20 percent of class time is devoted to studies in the social science and humanistic area. Some opportunity is provided to elect courses from both the technical and humanistic-social fields. The curriculum of the freshman year is the same for all.

The School contains five administrative departments, and there are a variety of optional programs available to upper-class students in each of these departments. Many of these are interdisciplinary in nature. Thus, for example, students may concentrate in areas such as Materials, Systems, the Environment, Bioengineering, Food Engineering, Pre-Medical, Transportation, Urban Systems, and Energy.

Although the curricula within the School of Engineering are shown as eight semester (normally four years), they require up to 130 semester hours credit for satisfactory completion. This is well above the University minimum of 120 semester hours for a degree.

### **Freshman Engineering**

All new students in engineering are enrolled in the Freshman Engineering Program until qualified to enter into a degree program, normally on satisfactory conclusion of the uniform freshman year.

### **COURSE REQUIREMENTS —**

#### **Freshman Year:**

#### **First Semester:**

RHET 100, MATH 131 (4 cr.), CHEM 100 (4 cr.), ENGIN 103 or 104, Social Science/Humanities Elective.

#### **Second Semester:**

Rhetoric Elective, MATH 132 (4 cr.), Hum., Soc. Sci. or Science Elective, ENGIN 103, PHYSIC 161 (4 cr.).

### **Chemical Engineering**

The Chemical Engineering Department, has introduced several innovations in career preparation in addition to its traditional program. These new developments offer much flexibility and provide the opportunity for a student to concentrate in career-oriented and interdisciplinary programs culminating in the award of an accredited B.S. degree in Chemical Engineering with emphasis in one of several chosen interdisciplinary fields of specialization. These include environmental engineering, bioengineering, food science and business administration.

Most recently added is the new Pre-Medical Option in chemical engineering. With minor modifications in the basic chemical engineering program, a student can also satisfy the course requirements for admission to medical school.

**Civil Engineering**

Civil engineering programs are offered emphasizing construction, transportation, water supplies, pollution control, ocean engineering, hydraulic engineering and fluid mechanics, soil mechanics and foundations engineering, surveying and mapping, structural engineering and materials engineering.

**Electrical and Computer Engineering**

As continued study after graduation is essential in this rapidly growing field, basic physical and systems principles are emphasized in the undergraduate program.

A program leading to a degree of Bachelor of Science in Computer Systems Engineering is also available. This program gives broad coverage to the various aspects of computer systems engineering and its underlying mathematics. However, there is much freedom for a student to explore in depth any area of particular interest including mathematics and theory of computation, machine organization, communications, electronics and device technology, numerical analysis, and theory of programming languages and syntactic analysis.

Further information on these programs may be obtained from the Department of Electrical and Computer Systems Engineering.

**Industrial Engineering and Operations Research**

In view of the wide variety of potential careers for IE/OR people, the curriculum is flexible. The 11 required courses in the Department (33 credit hours) sketch the central concepts of the profession and provide the core of its quantitative methods. Since the areas of application (and potential careers) are so varied, a block of nine courses (27 credit hours) is set aside so that each student may design an individual curriculum in conjunction with the adviser.

**Mechanical Engineering**

Students majoring in mechanical engineering may choose from alternative options emphasizing mechanical, or materials studies. Extensive offerings exist in energy, manufacturing and design. Mechanical engineers design and analyze a wide variety of systems in fields such as manufacturing, energy conversion, and

transportation. Materials engineers study the atomic structure of materials, polymers, materials processing, and materials analysis.

**College of Food and Natural Resources**

Undergraduate students in the College of Food and Natural Resources are exposed to an interdisciplinary, systems-oriented, problem-solving atmosphere.

A unique feature of the College of Food and Natural Resources is that the faculty for all the major programs is drawn from the three divisions of the College — research, resident teaching and extension, thereby bringing depth of teaching to every student.

**INTERNATIONAL AGRICULTURAL STUDIES (Interdepartmental Program)**

Students in this major choose a program from among those offered in the College of Food and Natural Resources and carry a specialty of International Studies within the chosen major. Supplementing major requirements are selected courses in Sociology, Anthropology, Geography, Economics, and Political Science. Students are urged to volunteer for two years of service in the Peace Corps or a similar organization upon completion of their B.S. degree.

**STOCKBRIDGE SCHOOL OF AGRICULTURE**

The Stockbridge School, an academic sub-unit of the College, offers two-year technically oriented programs in the food and agricultural sciences which lead to an Associate Degree. A separate bulletin describes these offerings in detail.

**Entomology**

Freshman Year:

First Semester:

CHEM 111 General, MATH 127 Calculus, Rhetoric elective, Humanities or Social Science elective, Elective.

Second Semester:

CHEM 112 General, MATH 128 Calculus, ZOOL 101 Introductory, Rhetoric elective, Humanities or Social Science elective.

**Environmental Sciences**

The following four courses are required of



all Environmental Sciences majors: ENVSCI 201 (Introductory Environmental Biology), 203 (Methods of Pollution Measurement), 390 (Perspectives of Environmental Sciences), and 391 or 392 (Seminar; Options in Environmental Management). In addition, students elect four more courses from the upper level offerings of the department. The 24 credit Department of Environmental Sciences requirement plus the 44 credit math/science requirement will more than satisfy the 60 credit science/math requirement for a B.S. degree.

The Environmental Sciences major will have an outside the department requirement. With the aid of an adviser, the student will choose and plan an integrated and individualized 12-credit course of study.

**Sample Program:**

**Freshman Year:**

BOTANY 100 (4 cr.), CHEM 111, F&R EC 177, RHET 100, Humanities or Social Science Elective, ZOOL 101, CHEM 112, Rhetoric (B), Humanities (C) and Social Science (D) Electives.

**Sophomore Year:**

CHEM 261 or 263 (4 cr.), MATH 127, ENVSCI 201, Social Science (D), Humanities (C), CHEM 262 or 264 (4 cr.), MATH 128, ENVSCI 203, ENVSCI Elective, Conjugate Area Electives.

**Junior Year:**

PHYSIC 141 (4 cr.), MICBIO 250, ENVSCI 390, Humanities (C) or Social Science (C), PHYSIC 142 (4 cr.), MICBIO 251, ENVSCI Elective, Conjugate Area Electives.

**Senior Year:**

ENVSCI Elective, Electives, ENVSCI 391 or 392, Conjugate Area Elective, ENVSCI Elective, Electives.

**Food & Agricultural Engineering**

The program emphasizes the integration of mathematics and the physical sciences into the interpretation and solution of biological production and processing problems.

**Freshman Year:**

**First Semester:**

RHET 100, Language & Writing, CHEM 111, MATH 135 Anal. Geom. & Calculus I, Social Science Elective, ENGIN 103 Graphics.

**Second Semester:**

Humanities Elective, CHEM 112, MATH 136 Anal. Geom. & Calculus II, PHYSIC 161 General (4 cr.), ENGIN 104 Problems (2 cr.)

**Food & Resource Economics  
AGRICULTURAL ECONOMICS**

**Freshman Year:**

**First Semester:**

RHET 100, or 110 (B), Humanities (C), Social Science (D), MATH 110 El. Tech. of Math (E), F&R EC 110 World Food (D).

**Second Semester:**

Rhetoric (B), Humanities (C), Social Science (D), Math or Natural Science (E), F&R EC — 206 Agricultural Economics.

**FOOD MARKETING ECONOMICS**

**Freshman Year:**

**First Semester:**

RHET 100, or 110 (B), Humanities (C), Social Science (D), MATH 110 El. Tech. of Math (E), F&R EC 110 World Food (D).

**Second Semester:**

Rhetoric (B), Humanities (C), Social Science (D), Math or Natural Science (E), F&R EC 206 Agricultural Economics.

**RESOURCE ECONOMICS**

**First Semester:**

RHET 100, or 110 (B), Humanities (C), Social Science (D), MATH 110 El. Tech. of Math (E), F&R EC 110 World Food (D).

**Second Semester:**

Rhetoric (B), Humanities (C), Social Science (D), Math or Natural Science (E), F&R EC 206 Agricultural Economics.

**Food Science & Nutrition**

Two majors are available in the Department: Food Science and Human Nutrition. Six options are available in the food Science major: 1) Nutrition, 2) Business, 3) Processing and Engineering, 4) Chemistry, 5) Microbiology, 6) Independent Concentration.

Four options are available in the Human Nutrition major: 1) Community and Public Health Dietetics, 2) Dietetics, 3) Computerization, 4) Independent Concentration.

**Freshman Year:**

**First Semester:**

RHET 100 or 110, CHEM 111, MATH 127, Electives (C) or (D).



**Second Semester:**

Rhetoric, CHEM 112, MATH 128, FS&N 251, Electives (C) or (D).

**Forestry & Wildlife Management  
FISHERIES BIOLOGY**

**Freshman Year:**

**First Semester:**

RHET 100 Language and Writing, MATH 127 Calculus, BOTANY 100 Intro., CHEM 111 Inorganic, NAREST 100 Cons. of Natural Resources.

**Second Semester:**

RHET 110 Language and Speaking, MATH 128 Calculus, ZOOL 101 Introductory, CHEM 112 Inorganic, Social Science Elective.

**FORESTRY**

Six curricular options are offered: General Forestry, Environmental-Urban Forestry, Forest-Business Management, Forest Hydrology, Forest Recreation, and Forest Science.

**Freshman Year:**

**First Semester:**

RHET 100 Language and Writing, MATH 127 Calculus, CHEM 111 Inorganic, BOTANY 100 Intro., NAREST 100 Cons. of Natural Resources.

**Second Semester:**

Rhetoric Elective, MATH 128 Calculus, CHEM 112 Inorganic, Humanities, Social Science.

**NATURAL RESOURCE STUDIES**

A non-professional curriculum designed for students who wish to become generalists in the area of natural resource management and conservation.

**Freshman Year:**

**First Semester:**

RHET 100 or 110, NAREST 100 Cons. of Natural Resources, BOTANY 100 or ZOOL 101, MATH (on basis of tests), Humanities or Social Science.

**Second Semester:**

Rhetoric Elective, Natural Resource Elective, BOTANY 100 or ZOOL 101, CHEM 110 (or higher) (4 cr.), Humanities or Social Science.

**WILDLIFE BIOLOGY**

Study toward the Bachelor of Science in Wildlife Biology should be regarded as pre-professional.

**Freshman Year:**

**First Semester:**

RHET 100 or 110, MATH 127 Calculus, CHEM 111 General, BOTANY 100 Intro. (4 cr.), NAREST 100.

**Second Semester:**

Rhetoric (B), MATH 128 Calculus, CHEM 112 General, ZOOL 101 Introductory, ECON 103.

**WOOD SCIENCE & TECHNOLOGY**

**Freshman Year:**

**First Semester:**

RHET 100 Language and Writing, MATH 123 Calculus, BOTANY 100 Intro., CHEM 111 Inorganic, ENGIN 103 Introductory.

**Second Semester:**

RHET 110 Language and Speaking, MATH 124 Calculus, FOREST 112 Dendrology, CHEM 112 Inorganic, ENGIN 104 Introductory (2 cr.)

**Home Economics**

The professional options in the Division of Home Economics include the following:

Home Economics Education, Fashion Marketing, Home Economics Cooperative Extension, Consumer Economics, and Community Services.

Individualized interdisciplinary programs may be pursued.

Programs for majors in the Division of Home Economics for the Freshman year:

**HOME ECONOMICS EDUCATION OR  
FASHION MARKETING**

**First Semester:**

RHET 100, PSYCH 101 or SOCIOL 101 or ECON 100, Math or Science, HEEd. Majors elect: HOM EC 259, Quality Analysis of Apparel, HOM EC 240, Textiles for Consmr. I, Fashion Mktg. Majors elect: HOM EC 170, Fashion Marketing, HOM EC 240, Textiles for the Consumer I.

**Second Semester:**

RHET 110, PSYCH 101 or SOCIOL 101 or ECON 100, Math or Science, HEEd. Majors elect: HOM EC 125, Basic Design, HOM EC 255, Man & Clothing; Fashion Mktg. Majors elect: HOM EC 255, Man & Clothing; HOM EC 276, Product Analysis: Non-Textiles.

**CONSUMER ECONOMICS,  
COOPERATIVE EXTENSION OR  
COMMUNITY SERVICES**

First Semester:

RHET 100, PSYCH 101 or SOCIOL 101,  
ECON 100, Math or Science, Elective.

Second Semester:

RHET 110, PSYCH 101 or SOCIOL 101,  
HOM EC 211, Economic Problems of the  
Family, Electives.

#### **Hotel, Restaurant & Travel Administration**

In addition to required core curriculum courses, students take courses in accounting and control; personnel and management; food planning, purchasing, preparation, and service; promotion, merchandising and sales; kitchen planning and maintenance, travel and tourism. Emphasis is on principles, analysis, computer application, and decision-making.

Freshman Year:

First Semester:

RHET 100 Language and Writing, MATH 120, HRTA 100 Introduction, Science Requirement (E), PSYCH 101 or SOC 101, HRTA 203 Guest Lecturers (1 cr.).

Second Semester:

RHET 110 Language and Speaking, HRTA 156 Food Prod. Mang. I, Science Requirement (E), Humanities Requirement (C), STATIS 121 or F&R EC 177.

#### **Landscape Architecture & Regional Planning**

##### **ENVIRONMENTAL DESIGN**

Students who are interested in Planning and/or a general introduction to problems of the Physical/visual environment should select courses under the parent major: Environmental Design; those interested in Landscape Architecture should select courses under the Option in Design Studio, which has limited enrollment.

A 2.0 cumulative quality point average is required for admission as a major. Admission to the Design Studio Option and to the senior year studio courses is based on the following criteria: 1) Demonstrated aptitude in design; 2) an overall cumulative average of not less than 2.50; 3) a cumulative average in departmental courses of not less than 3.00; and 4) permission of the design faculty.

Aptitude in design is measured through a one-day testing program taken at the end of the Sophomore year.

Freshmen and sophomores should con-

centrate on fulfilling University core requirements. Some recommended courses are:

for Env. Des. majors: HIST 150, 151  
ECON 103; POL SCI 220; PSYCH 101  
SOCIOL 103; BOTANY 100; GEOL 101  
STATIS 231, 232.

for Design Studio Opt.: ART 100, 111, 113  
ANTH 104; SOCIOL 103; PSYCH 101  
BOTANY 100 or 121; GEOL 101.

#### **PARK ADMINISTRATION**

A 2.0 cumulative quality point average is required for admission as a major. Freshmen and Sophomores should concentrate on fulfilling University core requirements. Certain core courses are required for this major and others are recommended as follows:

Required: PSYCH 101; SOCIOL 101;  
BOTANY 100 or 121; STATIS 231

Recommended: HIST 150, 333; POL SCI 219 or 220; BOTANY 221; GEOL 101; STATIS 232.

#### **Plant Pathology**

Freshman Year:

First Semester:

Mathematics, CHEM 111 General,  
BOTANY 100 General, Foreign Lang. or  
F&R EC 110 World Food & Nat. Res., RHET 100.

Second Semester:

PLPATH 100, CHEM 112 General, ZOOL 101 General, Elective, Rhetoric.

#### **Plant & Soil Science**

The Department of Plant & Soil Science offers three options for major students:

Plant Industry — (Agronomy, Floriculture & Ornamental Horticulture, Pomology, Vegetable Crops, and Turf Management.)

Freshman Year:

First Semester:

RHET 100, Lang. & Writing, or RHET 110, Lang. & Speaking, BOTANY 100, Intro. Botany (4 cr.), Mathematics, PLSOIL 110, Plant Propagation, "D" Elective.

Second Semester

Rhetoric, "D" Elective, CHEM 110, Gen. Inorganic (4 cr.), PLSOIL 100, Basic Plt. Sci., "C" Elective.

#### **Plant Science**

Freshman Year:

**First Semester:**

RHET 100, Lang. & Writing or RHET 110, Lang. & Speaking, BOTANY 100, Intro. Botany (4 cr.), Mathematics, PLSOIL 110 Plant Propagation, "D" Elective.

**Second Semester**

Rhetoric, "D" Elective, Mathematics, PLSOIL 100, Basic Plt. Sci., "C" Elective.

**Soil Science**

**Freshman Year:**

**First Semester:**

RHET 100, Lang. & Writing or RHET 110, Lang. & Speaking, BOTANY 100, Intro. Botany (4 cr.), Mathematics, PLSOIL 100 Plant Propagation, "D" Elective.

**Second Semester:**

Rhetoric, "C" Elective, Mathematics, PLSOIL 100, Basic Plt. Sci., "D" Elective.

**Veterinary and Animal Sciences**

The curriculum in the Animal Sciences, including poultry, provides fundamentals in the comparative nutrition, physiology, genetics, and management of various classes of livestock and the role of animal production in the national and world economy. Options emphasizing commercial animal production are supported by electives in agricultural economics, agricultural engineering, and business administration. Students interested in graduate work in such specialized areas of the animal sciences as nutrition, physiology or genetics should elect programs with stress on the sciences. Freshman pre-veterinary students in the College of Food and Natural Resources usually major in Animal Sciences, but may choose other departments if appropriate.

**Freshman Year:**

**First Semester:**

AN SCI 121 Introduct., BOTANY 100 General, CHEM 111 General, MATHEMATICS, RHET 100.

**Second Semester:**

Elective, CHEM 112 General, MATHEMATICS, Social Science, Rhetoric.

**School of Health Sciences**

The School of Health Sciences includes the Division of Nursing, the Division of Public Health, and the Department of Communication Disorders.

**Division of Nursing**

The Division of Nursing offers an undergraduate program which leads to the degree of Bachelor of Science in Nursing (B.S.N.). This program is approved by the State Board of Registration in Nursing, and is accredited by the National League for Nursing. Enrollment in recent years has been highly competitive, and is currently limited to 200 students per class. There will be no admissions to this program for the 1977-78 academic year.

There are two components of the program: 1) lower division core and university core requirements; and 2) the upper division nursing science major. Nursing core may be completed at this University or in other colleges.

Clinical learning experiences are community based in four Satellite Learning Centers. These Centers are located in the following geographic areas: Amherst-Northampton, Franklin County, Springfield-North, and Model Cities-Springfield.

**Requirements for Admission and Application Procedure**

The requirements for admission to the upper division are: 1) successful completion of 60 semester hours of lower division preparation; 2) a minimum cumulative grade point average of 2.5; 3) achievement of a grade of at least "C" in each prerequisite course; and 4) a minimum grade point average of 2.5 for all core courses.

Students with a variety of academic and nursing backgrounds may apply for admission. Students may have earned credits in other colleges/universities in the Arts and Sciences or they may satisfy these requirements by satisfactorily completing CLEP (College Level Entrance Proficiency) Examinations in certain Arts and Science subjects, such as Chemistry, Microbiology, etc. (The University requires 45 semester hour credits to be taken in residence).

The National League for Nursing Comprehensive Examinations will be used for guidance and placement in the program. Students in the major will be expected to take all senior level nursing science courses.

All students seeking admission and information concerning examination details and requirements should contact the Admissions Office or the Division of Nursing.



Core requirements to the nursing major are starred (\*) below.

**Freshman Year:**

**First Semester:**

CHEM 111, Humanities, Rhetoric, \*Anthropology, \*Physics.

**Second Semester:**

CHEM 112, Rhetoric, \*Statistics (Applied), \*HUMDEV 370, \*Perspectives in Nursing and Allied Health Sciences (Interdisciplinary Approach).

**Sophomore Year:**

**First Semester:**

\*Human Anatomy and Physiology, \*MIC-BIO 140, \*PHIL 125 (Logic), \*Biochemistry, \*PSYCH 201.

**Second Semester:**

\*Human Anatomy and Physiology, SOCIOL 101, Humanities, \*Principles and Skills Basic to Professional Nursing and Health Care of People (6 cr.).

#### **Division of Public Health**

Students are expected generally to follow the course sequences outlined below during their freshman year. A minimum of 30 major credits is required of all students for the Bachelor of Science degree. Credits from other University departments are included in these major credits.

#### **ENVIRONMENTAL HEALTH**

**Freshman Year:**

**First Semester:**

RHET 100 or 110, MATH 127 Calculus, CHEM 111, ZOOL 101 (General), PSYCH 101 or SOCIOL 101.

**Second Semester:**

RHET 100 or 110, MATH 128 Calculus, CHEM 112, ZOOL 203, SOCIOL 101 or PSYCH 101.

#### **COMMUNITY HEALTH AND HEALTH EDUCATION**

**Freshman Year:**

**First Semester:**

RHET 100 or 110, MATH 127 Calculus, CHEM 111, ZOOL 101 (General), PSYCH 101 or SOCIOL 101.

**Second Semester:**

RHET 100 or 110, MATH 128 Calculus, CHEM 112, SOCIOL 101 or PSYCH 101, Humanities Elective.

#### **MEDICAL TECHNOLOGY**

The curriculum in medical technology

consists of a three-year program followed by a 12-month internship in an accredited school of medical technology affiliated with the University.

After successful completion of the 12-month internship and after satisfying the requirements of the Division, a student will receive a Bachelor of Science degree in medical technology. A total of 130 academic credits is necessary for graduation with this option.

Students are not to be admitted to the medical technology program until they have:

1) Completed a minimum of 48 credits including the course outlined below in the freshman year in the health laboratory sciences curriculum.

2) Registered for an additional 16 specified credits for the second semester of the sophomore year.

3) Submitted an application for admission to the Director of the medical technology program prior to March 1 of the year they wish to enter the program. (Applications are available from the Director of the medical technology program in the School of Health Sciences).

Students are eligible for a major in medical technology in their junior year. Entering freshmen who express an interest in medical technology will be accepted in the Division of Public Health, School of Health Sciences as majors in the health laboratory science curriculum.

**Freshman Year:**

**First Semester:**

RHET 100, CHEM 111, MAT 127, ZOOL 101, Elective.

**Second Semester:**

CHEM 112, MATH 128, RHET 110, Elective.

#### **HEALTH LABORATORY SCIENCE**

Students completing this curriculum will also complete requirements established by the American Society of Clinical Pathologists for submitting applications to approved schools of medical technology offering clinical internships.

**Freshman Year:**

**First Semester:**

RHET (110), CHEM 111, MATH 127, ZOOL 101, Elective.



Second Semester:

CHEM 112, MATH 128, RHET 110, Elective.

### **Department of Communication Disorders**

The undergraduate Communication Disorders curriculum has a pre-professional orientation. Freshman and sophomore years are devoted primarily to the completion of the general University requirements.

A minimum of 30 major credits is required of all students for the Bachelor's degree.

## **School of Physical Education**

The School of Physical Education includes the Departments of Exercise Science, Professional Preparation in Physical Education, Sport Studies and Athletics. It offers an undergraduate major in Physical Education and graduate programs in Exercise Science and Sport Studies.

### **GENERAL PHYSICAL EDUCATION PROGRAM**

This program offers instruction in sport and other forms of physical activity.

#### *Majors' Program*

Students may elect to follow either the teacher education program or the related disciplines program which includes study in exercise science or sport studies. The teacher education option offers further opportunity for specialization. A student may select a concentration in secondary education or elementary education. Similarly, concentrations available through the related disciplines program are exercise science and sport studies.

Each student is expected to select an area of concentration during the sophomore year. During the first two years of study, essentially the same for all majors, students fulfill the University core requirements and the physical education core requirements. The physical education core consists of the following courses:

EXC SCI 204 — Human Anatomy, EXC SCI 205 — Kinesiology. (Prerequisite: Exc. Sci. 204), EXC SCI 278 — Physiology of Exercise (Prerequisite: Zoology 135).

A student will select three of the following four courses:

SPORST 200 — Sociology of Sport and Physical Activity, Prerequisite: Sociol. 107, SPORST 201 — Psychology of Sport and Physical Activity (Prerequisite Psych. 101), SPORST 202 — History of Sport and Physical Activity (Prerequisite: History 100, 101, 150, or 151), SPORST 203 — Philosophy of Sport and Physical Activity (Prerequisite: Phil. 105), Activity Courses.

The recommended program for the first two years of study is as follows:

#### *Freshman Year:*

##### *First Semester:*

Electives, ZOOL 101 Intro. Zool., P.E. Activity (2 cr.), RHET 100 or 110.

##### *Second Semester:*

Electives, ZOOL 135 Intro. to Physiology, P.E. Activity (2 cr.), Rhetoric Elective.

Electives, Soc 101 (D), Psych 101 (D), Hist 100 or 101 (C), Phil. 105 (C). These are prerequisites to Physical Education Core Courses

#### *Sophomore Year:*

##### *First Semester:*

EXC SCI 204 Human Anatomy, SPORST 200, 201, 202, 203 (Select any 2), P.E. Activity (2 cr.), Elective.

##### *Second Semester:*

Elective, EXC SCI 205 Kinesiology, SPORST 200, 201, 202, 203 (Select any 1), P.E. Activity (2 cr.), EXC SCI 278 Phys. of Ex.

### **Leisure Studies and Services**

The curriculum presented below represents a core program. The student majoring in Leisure Studies and Services is also encouraged to gain as much practical non-credit experience as possible through volunteer service, as well as part-time and seasonal employment in several settings and with varied types of participants.

#### *Freshman Year:*

##### *First Semester:*

LS&S 101, Man and Leisure, RHET 100, Language and Writing, or RHET 110, Language & Speaking, Humanities & Fine Arts Elective (C), Math. or Nat. Science Elective (E), Sociol. Elective (D).

LS&S 111, Leisure Activity Analysis, Rhetoric Elective, Humanities & Fine Arts Elective (C), Math. or Nat. Science Elective (E), PSYCH 101, Elem. Psychology (D), LS&S 103 (1 cr.).

### **Athletics**

Members of the athletic department are responsible for the conduct and administration of the various phases of intercollegiate and intramural athletic programs.

## **Division of Military and Air Science**

### **Air Science**

The Department of Air Science offers courses of general interest to the University student and of specific interest to both male and female students who would like to prepare for and serve as officers on duty with the U.S. Air Force. This service may consist of either active duty with the regular forces or reserve duty with selected Air National Guard or U.S. Air Force Reserve Units. The curriculum is designed to study the need for military forces, their nature, organization, and mission (with emphasis on the Air Force), and the nature of service as a professional Air Force officer. Participation in the ROTC programs is voluntary. Uniforms and textbooks are provided. Students may register for ROTC courses at the same time they register for other University courses. No formal application is required.

The Department offers two separate programs: a four-year program for students desiring to learn more about the military, and a two-year program designed primarily for transfer students who have already decided to enter the military.

There are two major phases in the four-year program curriculum. The first phase is the General Military Course (GMC) which forms a single unit consisting of two courses offered during the freshman and sophomore years. The studies cover the nature and causes of international conflict, the functions and employment of U.S. military forces, and the historical development of air power. This first phase carries no service commitment and is an excellent way for students to study the military and decide if they want to continue on for an Air Force commission. Enrollment in the GMC confers no military status on the student. These courses meet for one classroom hour and one Corps Training hour per week.

In the summer between the sophomore and junior years, students who have de-

cided to continue the program and are selected for entry attend a four-week field training session at an Air Force installation.

The second phase of the four-year program is the Professional Officer Course (POC) taken during the junior and senior years. Enrollment depends upon academic and medical qualification and selection by the department. In the POC, academic concentration is on preparation for service as an Air Force officer, and deals with defense policies in the contemporary world, civil-military relations, Air Force leadership at the junior officer level, military management, and military law. The development of communicative techniques is also an integral part of the POC curriculum. POC classes meet for 3 classroom hours and 1 Corps Training hour per week.

The two-year program requires that the student have two academic years remaining at either undergraduate or graduate level. Successful completion of a six-week program on a military installation during the summer prior to enrollment is a prerequisite for these students. Those interested should apply no later than one academic semester before enrollment, since processing for the summer training must be completed as soon as possible. The two-year program is available to transfer students and students unable to participate in the four-year program. After enrollment, the two-year student receives the same instruction as a four-year member.

Corps Training is a non-academic, cadet-planned and directed activity. It focuses on military customs and courtesies, the career environment of the Air Force officer, and practical experiences in leadership and management.

Field Training involves a practical, first-hand experience with military life on an Air Force installation. Cadets receive instruction on junior officer activities, career field orientation, Air Force base functions and environment, aircraft and aircrew orientation, survival training, and physical conditioning. Applicants for the two-year program also receive academic instruction on subjects normally covered during the GMC portion of the four-year program.

The department offers to qualified stu-

dents scholarship assistance which pays university tuition, fees, textbook allowance, and lab expenses, plus a stipend of \$100 per month. High school seniors compete on a national basis for scholarships starting in the freshman year.

Qualified students interested in becoming military pilots may participate in the Flight Instruction Program. Completion of this program leads to pilot qualification for later advancement to Air Force pilot training. In addition to actual flight instruction, students take ground instruction in weather, navigation, and FAA regulations.

Students with previous military training may have this experience credited toward all or part of the first two years of the four-year program.

Successful completion of the Air Force ROTC program results in the awarding of a commission as a Second Lieutenant in the U.S. Air Force. In their senior year, students may request a delay in reporting to active duty in order to complete graduate work or to attend professional school. Students who are interested in obtaining further information may inquire at Dickinson Hall or telephone (413) 545-2437/2451.

**Freshman Year:**

**First Semester:** Air Science 111 (1 cr.), The U.S. Air Force.

**Second Semester:**

Air Science 112 (1 cr.), U.S. Military Forces.

### **Military Science**

The Department of Military Science offers a two- and four-year Reserve Officers Training Corps (ROTC) program which is voluntary and open to eligible, regularly enrolled men and women students of the University. Enrollment in departmental courses for credit is open to all members of the University community. Students who have completed a four-year program or equivalent are eligible for a commission in the U.S. Army upon graduation.

The four-year program consists of the Basic Course (freshman and sophomore years) and the advanced course (junior and senior years). Basic Course students are taught Contemporary Military Theory and Basic Military Leadership and Management. Basic Course cadets may termi-

nate ROTC enrollment at any time in accordance with University policy without obligation to the U.S. Government or to the Army.

Following successful completion of the Basic Course, qualified cadets may enroll in the Advanced Course. Advanced Course students are taught Military Law, Contemporary Military Theory, Organization of the Department of Defense and the Armed Forces, and Advanced Leadership and Management.

Students with previous military training may receive advanced placement in the ROTC program.

In addition to classroom activities, all regularly enrolled ROTC cadets participate in a leadership laboratory comprised of two field practicums each semester, designed to allow the student to apply theory learned in the classroom. \*Following the junior year, each cadet attends a six-week Advanced ROTC Summer Camp at Fort Bragg, North Carolina, for intensive training in military leadership. Selected students may opt to attend the U.S. Army Ranger School at Fort Benning, Georgia, in lieu of attendance at the Advanced ROTC Summer Camp.

Scholarship assistance consisting of University tuition, fees, textbook allowances, lab expenses and a grant of \$100 per month are offered to qualified students for one, two and three years. Non-scholarship Advanced Course cadets receive a grant of \$100 each month during the junior and senior years.

Various extracurricular activities exist for interested cadets. Qualified students may participate in the Flight Instruction Program leading to pilot qualification in Army Aviation. Students may also participate in confidence building activities such as rappelling, rubber boat exercises, mountain climbing, orienteering and cold weather survival on a voluntary basis.

Upon completion of University degree requirements and military science requirements, cadets normally receive a Reserve Commission as Second Lieutenants in the U.S. Army and are required to serve from three months to two years on active duty. Scholarship cadets serve four years. Cadets designated as Distinguished Military Students as a result of achievements in academic and military studies may



apply for a commission in the Regular Army. An attempt is made to closely correlate the academic discipline with the Army Branch of assignment.

In their senior year, cadets may request a delay on reporting to active duty for up to two years in order to complete graduate or professional studies. Programs are available in such fields as law and medicine which lead to commissions in the Judge Advocate General or Medical Corps following professional schooling.

Students who are interested in obtaining further information may inquire at the Department of Military Science, Dickinson Hall, or telephone (413) 545-2321/2322.

\*Student health insurance is required for participation in the Leadership Laboratory.

## Graduate School

Graduate work leading to the Doctor of Philosophy degree may be taken in the following fields: Animal Science, Anthropology, Astronomy, Biochemistry, Botany, Business Administration, Chemical Engineering, Chemistry, Civil Engineering, Communication Disorders, Communication Studies, Comparative Literature, Computer & Information Science, Economics, Electrical & Computer Engineering, English, Entomology, Environmental Engineering, Food & Agricultural Engineering, Food & Resource Economics, Food Science & Nutrition, Forestry & Wood Technology, Geology, History, Human Movement, Industrial Engineering & Operations Research, Linguistics, Mathematics, Mechanical Engineering, Microbiology, Ocean Engineering, Physics, Plant Pathology, Plant Science, Political Science, Polymer Science & Engineering, Psychology, Sociology, Soil Science, Wildlife & Fisheries Biology, and Zoology.

A cooperative Ph.D. program is available in Biochemistry, Botany, Chemistry, French, Geology, Germanic Languages & Literatures, Microbiology, Philosophy, Physics, Spanish & Portuguese, and Zoology.

The School of Education offers several specialized programs leading to the Doctor of Education degree.

Master's degrees are offered in the following areas: Animal Science, Anthropology, Art, Art History, Astronomy,

Biochemistry, Botany, Business Administration, Chemical Engineering, Chemistry, Civil Engineering, Classics, Communication Disorders, Communication Studies, Comparative Literature, Computer & Information Science, Economics, Education, Electrical & Computer Engineering, English, Entomology, Environmental Engineering, Fine Arts (Art, English, or Theatre), Fisheries Biology, Food & Agricultural Engineering, Food & Resource Economics, Food Science & Nutrition, Forestry & Wood Technology, French, Geology, Germanic Languages & Literatures, History, Home Economics, Hotel, Restaurant & Travel Administration, Industrial Engineering & Operations Research, Labor Studies, Landscape Architecture, Linguistics, Manufacturing Engineering, Marine Sciences, Mathematics, Mechanical Engineering, Microbiology, Music, Nursing, Ocean Engineering, Philosophy, Physical Education, Physics, Plant & Soil Sciences, Plant Pathology, Political Science, Polymer Science & Engineering, Psychology, Public Administration, Public Health, Regional Planning, Slavic Languages & Literatures, Sociology, Theater, Wildlife Biology, and Zoology.

Holders of undergraduate degrees desiring further information may request a Graduate School Bulletin and application materials by writing to the Graduate Admissions Office, Graduate Research Center, University of Massachusetts, Amherst, MA 01002.



## Administrative Officers

### University System

Robert Wood, Ph.D. (Harvard University),  
President

Ernest A. Lynton, Ph.D. (Yale University),  
Senior Vice-President for Academic  
Affairs

Jay Janis, B.A. (Yale University), Senior  
Vice-President for Management and  
Business Affairs

Nan S. Robinson, M.A. (Radcliffe College),  
Vice-President for Planning

Gladys Hardy, B.A. (Sarah Lawrence Col-  
lege), Secretary

Kenneth W. Johnson, B.S. (University of  
Vermont), Treasurer

Adam Yarmolinski, LL.B. (Yale Univer-  
sity), Ralph Waldo Emerson Professor  
of the University

Rev. Michael P. Walsh, Ph.D. (Fordham  
University), Academic Adviser to the  
President

### Amherst Campus

#### OFFICE OF THE CHANCELLOR

Randolph W. Bromery, Ph.D. (Johns Hop-  
kins University), Chancellor

James I. DeShields, Ed.D. (University of  
Massachusetts), Assistant to the  
Chancellor

Douglas R. Forsyth, Ph.D. (Colorado State  
University), Assistant to the Chancellor

Warren W. Gulko, Ph.D. (University of  
Minnesota), Director of Budgeting and  
Institutional Studies

H. J. Littlefield, Jr., B.S. (Kings/Point), Di-  
rector of Planning

Daniel M. Melley, M.S. (Boston Univer-  
sity), Director of Public Affairs

Sidney Myers, J.D. (Boston University Law  
School), Staff Attorney

George A. Norton, B.S.M.E. (University of  
Maine), Director, Physical Plant

Charlotte Rahaim, Ed. D. (University of  
Massachusetts), Assistant to the  
Chancellor

Zina Tillona, D.M.L. (Middlebury Col-  
lege), Assistant to the Chancellor

#### OFFICE OF THE VICE CHANCELLOR FOR ACADEMIC AFFAIRS AND PROVOST

Dean Alfange, Jr., Ph.D. (Cornell Univer-  
sity), Acting Vice Chancellor for  
Academic Affairs and Provost

David C. Bischoff, Ph.D. (Pennsylvania  
State University), Associate Provost

Vere C. Chappell, Ph.D. (Yale University),  
Acting Associate Provost

Robert L. Woodbury, Ph.D. (Yale Univer-  
sity), Associate Provost for Special Pro-  
grams

#### ACADEMIC DEANS

Jeremiah M. Allen, Ph.D. (University of  
Colorado), Dean of the Faculty of  
Humanities and Fine Arts, College of  
Arts and Sciences

David G. Bischoff, Ph.D. (Pennsylvania  
State University), Dean of the School of  
Physical Education

Vere C. Chappell, Ph.D. (Yale University),  
Acting Dean of the Graduate School

William A. Darity, Ph.D. (University of  
North Carolina at Chapel Hill), Dean of  
the School of Health Sciences

Louis Fischer, Ph.D. (Stanford University),  
Acting Dean of the School of Education

Glen Gordon, Ph.D. (University of  
Chicago), Acting Dean of The Faculty  
of Social and Behavioral Sciences, Col-  
lege of Arts and Sciences

George Odiorne, Ph.D. (New York Univer-  
sity), Dean of the School of Business  
Administration

Kenneth G. Picha, Ph.D. (University of  
Minnesota), Dean of the School of En-  
gineering

Seymour Shapiro Ph.D. (University of  
Michigan), Dean of the Faculty of Nat-  
ural Sciences and Mathematics, Col-  
lege of Arts and Sciences

Arless A. Spielman, Ph.D. (University of  
Minnesota), Dean of the College of  
Food and Natural Resources; Director,  
Experiment Station and Extension  
Service

#### OFFICE OF THE VICE CHANCELLOR FOR STUDENT AFFAIRS

Robert W. Gage, M.D. (Harvard Medical  
School), Vice Chancellor for Student  
Affairs

Barry W. Averill, B.S. (University of Ken-  
tucky), Director of Health Services

William F. Field, Ph.D. (University of  
Maryland), Dean of Students and  
Interim Director of the Campus Center

Sally A. Freeman, M.A. (New York Uni-  
versity), Director of Student Develop-  
ment Center

David L. Johnston, M.A. (State University of New York at Albany), *Director of Public Safety*  
*Director of Residential Life* (Position vacant)  
William D. Tunis, Ph.D. (University of Massachusetts), *Dean of Admissions and Records*

#### OFFICE OF ADMINISTRATIVE SERVICES

John L. DeNyse, B.B.A. (University of Massachusetts), *Director of Personnel and Financial Services*  
Jake E. Bishop, L.L.B. (LaSalle Extension University), *Director of Procurement*  
William H. Maus, B.B.A. (Northeastern University), *Controller*  
Harold Scott Overing, *Coordinator of Employee/Labor Relations*

#### FIVE COLLEGE COOPERATION

E. Jefferson Murphy, Ph.D. (University of Connecticut), *Coordinator*

#### CHAPLAINS

Rev. Frank Dorman, M. Div. (Drew Theological School), *Member, United Christian Foundation Ministry*  
Ms. Ruth Fessenden, B.A. (University of Massachusetts), *Member, United Christian Foundation Ministry*  
Rev. Peter Sabey, Th.M. (Princeton Seminary), *Member, United Christian Foundation Ministry*  
Rev. Leo A. Leclerc, B.A. (University of Montreal), *Director of the Newman Center and Chaplain to Roman Catholic Students*  
Rev. Merle L. Lavoie, M.A. (University of Louvain, Belgium), *Chaplain to Roman Catholic Students*  
Rev. J. Joseph Quigley, B.S. (Fordham University), *Chaplain to Roman Catholic Students*  
Rabbi Savi Perlmutter, M.A. (Temple University), *Chaplain to Jewish Students*

## Where to Write for Further Information

### Admissions

William D. Tunis, *Dean of Admissions,*  
*Records and Financial Aid, Whitmore*

### Placement and Guidance Services

Director, Student Development Center,  
*Berkshire House*

### Expenses, Payments

Robert R. Mishol, *Bursar, Whitmore*

### Graduate School

Dean, Graduate Research Center

### Housing

Bruce Cochrane, *Whitmore*

### Financial Aid

Richard A. Dent, *Director (Loans &  
Scholarships), Whitmore*

### Academic Records and Transcripts

Ralph D. Jones, *Registrar, Whitmore*

### Stockbridge School of Agriculture

John W. Denison, *Director, Stockbridge  
Hall*

### Student Affairs

William F. Field, *Dean of Students,*  
*Whitmore*

### Summer Session

Office of the Provost, *Whitmore*

### Admissions at Boston

Director of Admissions

### Admissions at Worcester

Office of Admissions

### PLEASE NOTE

All correspondence concerning the Uni-  
versity of Massachusetts at Amherst  
should be addressed to the appropriate  
office, University of Massachusetts,  
Amherst, MA 01002.

All correspondence concerning the Uni-  
versity of Massachusetts at Boston  
should be addressed to: Columbia Point,  
Boston, MA 02115.

All correspondence concerning the Uni-  
versity of Massachusetts Medical  
School should be addressed to: 55 Lake  
Avenue North, Worcester, MA 01605.

## THE NEW ENGLAND ASSOCIATION OF COLLEGES AND SECONDARY SCHOOLS

The University of Massachusetts at  
Amherst is accredited by the New En-  
gland Association of Colleges and Sec-  
ondary Schools. The Association ac-  
credits schools and colleges in the six  
New England states. Membership in  
one of the six regional accrediting as-  
sociations in the United States indi-  
cates that the school or college has been  
carefully evaluated and found to meet  
standards agreed upon by qualified  
educators.



ADMISSIONS OFFICE  
WHITMORE ADMINISTRATION BUILDING  
UNIVERSITY OF MASSACHUSETTS  
AMHERST, MASSACHUSETTS 01003

If undeliverable, return postage guaranteed

~~NON-PROFIT ORG.  
U.S. POSTAGE  
PAID  
Permit No. 2  
Amherst, Ma. 01003~~

**1976-1977 Undergraduate  
Course and Faculty Directory**  
University of Massachusetts at Amherst



The *Undergraduate Catalog* of the University of Massachusetts at Amherst consists of the *Course and Faculty Directory* and the *General Information Bulletin*. All students are responsible for observing the rules and regulations thus published, as well as those published in *University Directions*. The University reserves, for itself and its departments, the right to change its announcements or regulations whenever such action is deemed appropriate or necessary.

The University of Massachusetts at Amherst prohibits discrimination on the basis of race, color, sex, age, religion, national origin or handicap in any aspect of its employment, in the recruitment, admission and treatment of students and in its policies and programs, as required by Federal and State laws and regulations. Inquiries concerning these laws and regulations or their application should be addressed to the Office of the Affirmative Action Coordinator, Chancellor's Office, 375 Whitmore Administration Building.

MARCH 1976

The University *Undergraduate Catalog* for the 1976-77 academic year is part of the One Hundred and Eleventh Annual Report of the University of Massachusetts and as such is Part II of Public Document 31, Section 8, Chapter 75, of the General Laws of Massachusetts.

# Table of Contents

## **BOARD OF TRUSTEES, p. 3**

## **A MESSAGE FROM THE CHANCELLOR, p. 3**

## **GENERAL INFORMATION, p. 4**

## **ACADEMIC CALENDAR, p. 4**

1976-1977

1977-1978

## **ADMISSIONS, p. 4-8**

Freshman  
When to File  
Deadlines etc.  
    SAT Test Date Deadline  
If you previously applied for  
    Admission  
    Recommendations  
Application and Other Fees  
Required Tests  
Optional Tests  
Entrance Categories  
Candidate's Reply Date  
Interviews  
Notification of Decision  
New England Regional Student  
    Program  
Veterans  
Out-of-State Applicants  
Handicapped Students  
Fields of Study Not Offered  
Freshman Orientation  
Visiting Students  
Preparatory Studies  
Minority Student Admission  
    Programs  
Transfers  
Physical Exam

## **RESIDENCE STATUS, p. 9-10**

## **FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT, p. 10-13**

Policy and Procedures

## **ACADEMIC REGULATIONS, p. 13-15**

Classification of Students  
Graduation Requirements

## **HOUSING, p. 15-16**

Policy  
Exemptions  
Room Assignments  
Housing Plans  
Room Furnishings  
Residence Hall Staff  
Room Rent  
Apartments for Married Students  
Off-Campus Housing  
Insurance  
Food Services

## **EXPENSES, p. 17-18**

Amherst Campus  
Explanation of Fees and Payments  
Payment Due Date  
Late Payment and Registration  
Refunds

## **STUDENT PERSONNEL SERVICES, p. 18-19**

## **HEALTH SERVICES, p. 20**

## **STUDENT ACTIVITIES, p. 20-23**

Campus Center Complex  
Student Activities Office  
Media  
Professional and Special Interest  
    Clubs  
Social Action Groups  
Non-Traditional Student Assembly  
    and CAOS  
Programming Organizations  
Student Honor Societies  
Academic Honor Societies  
Student Government  
Fraternities and Sororities  
Music Organizations  
University Theater  
Debate  
Arts Council  
Athletics  
Alumni Association  
Religious Activities  
Motor Vehicles

## **FINANCIAL AID, p. 24**

General Information  
Application Procedures  
Disbursing of Awards  
Types of Aid  
Benefits for Veterans and Their  
    Dependents  
Military Service

## **GENERAL SERVICES, p. 25-27**

University Library System  
The University Press  
Scholarly Journals  
Language Laboratories  
Office of Public Affairs  
Office of Budgeting and Institutional  
    Studies  
Cooperative Extension Service  
Massachusetts Agricultural Experi-  
    ment Station  
Other Facilities and Services  
Five College Courses  
Regional Student Program  
Pre-Law Advising Program  
Physically Disabled Students

## **SPECIAL ACADEMIC PROGRAMS, p. 27-31**

Bachelor's Degree with Individual  
    Concentration  
Colloquia  
Continuing Education  
Everywoman's Center  
Global Survival Freshman Year  
    Program  
The University Honors Program  
Legal Studies Program  
Orchard Hill Residential College  
The Center for Outreach Programs  
Overseas Study  
Project 10  
Rhetoric  
Southwest Residential College  
Summer Session  
University Without Walls  
University Year for ACTION  
Upward Bound

## **SCHOOLS, COLLEGES, DEPARTMENTS and PROGRAMS, p. 32-51**

### **College of Arts and Sciences, p. 32**

*Faculty of Humanities and Fine Arts*  
Afro-American Studies  
Art  
    Fine Arts  
Asian Studies  
    Chinese  
    Japanese  
Classics  
Comparative Literature  
English  
    Journalistic Studies  
French and Italian  
    French  
    Italian  
Germanic Languages and  
    Literatures  
History  
Linguistics  
Music and Dance  
Philosophy  
Slavic Languages and Literatures  
Spanish and Portuguese  
Theater

### **Faculty of Natural Sciences and Mathematics**

Biochemistry  
Botany  
Chemistry  
Computer and Information Science  
Geology and Geography  
    Geography  
    Geology



Mathematics and Statistics

Mathematics

Probability and Statistics

Microbiology

Physics and Astronomy

Astronomy

Physics

Zoology

*Faculty of Social and Behavioral  
Sciences*

Anthropology

Communication Studies

Economics

Political Science

Psychology

Sociology

*Interdisciplinary Programs*

Classics and Philosophy

Judaic Studies

Latin American Studies

Linguistics and Philosophy

Linguistics and Chinese

Linguistics and German

Linguistics and Japanese

Linguistics and Russian

Mathematics and Philosophy

Near Eastern Studies

Pre-Dental, Pre-Medical, and Pre-Vet-  
erinary Programs

Science Major

Social Thought and Political

Economy

Soviet and East European Studies

Western European Area Studies

**School of Business Administration,  
p. 52-53**

Accounting

General Business and Finance

Management

Marketing

**School of Education, p. 53-55**

Designs for Effective Learning

Division of Educational Planning and  
Management

Division of Humanistic Applications  
of Social and Behavioral Sciences  
in Education

Educational Policy Studies

Transdisciplinary Education

Human Development

**School of Engineering, p. 55-57**

Freshmen Engineering

Chemical Engineering

Civil Engineering

Electrical and Computer

Engineering

Electrical Engineering

Computer Systems Engineering

Industrial Engineering and Opera-  
tions Research

Mechanical Engineering

**College of Food and Natural  
Resources, p. 57-63**

Entomology

Environmental Sciences

Food and Agricultural Engineering

Food and Resource Economics

Food Science and Nutrition

Food Science

Human Nutrition

Forestry and Wildlife Management

Fisheries Biology

Forestry

Natural Resource Studies

Wildlife Biology

Wood Science & Technology

Home Economics

Hotel, Restaurant, and Travel

Administration

Landscape Architecture and Regional  
Planning

Environmental Design

Park Administration

Plant Pathology

Plant and Soil Sciences

Veterinary and Animal Sciences

Animal Sciences

Pre-Veterinary

**School of Health Sciences, p. 64-65**

Nursing

Public Health

Environmental Health

Community Health and Health

Education

Medical Technology

Health Laboratory Science

Communication Disorders

**School of Physical Education,  
p. 66-67**

General Physical Education  
Program

Leisure Studies and Services

Athletics

**Division of Military and Air Science,  
p. 67-68**

Air Science

Military Science

**Graduate School, p. 69**

**DIRECTORY OF COURSES, p. 70**

**ADMINISTRATIVE OFFICERS, p. 187**

## The Board of Trustees

## A Message from the Chancellor

### *Organization of 1976*

Robert M. Abrams of Holyoke  
Stephen G. Breyer of Cambridge  
Sylvia K. Burack of Brookline  
Bruce R. Carlson of Dallas, Texas  
Catherine Forbes Clark of Boston  
Theresa Conti of Boston  
Edmund J. Croce of Worcester  
Paul M. Cronin of Boston  
Daniel Dennis of Billerica  
Robert D. Gordon of Boston  
Joseph P. Healey of Arlington  
Ogretta V. McNeil of Worcester  
Ruth S. Morgenthau of Cambridge  
Gavin D. Robertson of Worcester  
Carolyn C. Rowland of Boston  
Alan Shaler of Easthampton  
Erline Shearer of Dorchester  
Robert J. Spiller of Winchester  
Frederick S. Troy of Boston

### *Ex Officio*

Michael S. Dukakis of Brookline,  
Governor of the Commonwealth

Robert Wood of Lincoln,  
President of the University

Gregory R. Antig of Needham,  
Commissioner of Education

Jonathan E. Fielding of Brookline,  
Commissioner of Public Health

Robert L. Okin of Cambridge,  
Commissioner of Mental Health

Frederic Winthrop, Jr. of Ipswich,  
Commissioner of Agriculture

Nancy B. Eddy of Amherst, Chairman,  
Board of Selectmen

### *Officers of the Board*

Joseph P. Healey of Arlington,  
Chairman

Gladys Keith Hardy of Newton,  
Secretary

Kenneth W. Johnson of Amherst,  
Treasurer

Dorothy K. Eichel of Boston,  
Assistant Secretary



I am pleased that you are considering attending the University of Massachusetts at Amherst. Now in its second century of education, research and service, this publicly-supported University offers programs of excellence and diversity to the broadest possible cross-section of the citizens of this Commonwealth, to whom it remains both responsible and responsive.

Through the University's rich combination of human expertise and material resources, its students have unique opportunities to prove themselves and their concepts, and to shape and extend their capacities for knowing and caring.

I welcome student participation in and contribution to this institution's intellectual governance and growth. In the long run, experience has shown that it is student energy, commitment and questioning which most surely shape the University's future successes.

Randolph W. Bromery  
Chancellor

## General Information

## Academic Calendars

The University of Massachusetts is the state university of the Commonwealth, founded under provisions of the 1862 Morrill Land Grant Act. Incorporated as Massachusetts Agricultural College in 1863, the institution became Massachusetts State College in 1931, and the University of Massachusetts in 1947. Rooted in the liberal arts tradition, the institution has grown steadily from the four teachers, four buildings, and handful of students at its opening session in 1867 to the present state university system of three major campuses.

Situated in the Connecticut River Valley, the Amherst campus consists of approximately 1,200 acres of land and 150 buildings, including classroom and laboratory facilities as well as residence halls and other units.

To augment the Commonwealth's university-level facilities, the University of Massachusetts at Boston was opened in 1965. The University's Medical School at Worcester, founded in 1962 by an Act of the Legislature, enrolled its first class in 1970.

The total resources of the University are dedicated to giving all qualified students full opportunities to develop their capabilities for service in a growing society.

### 1976

Registration Day-Undergraduate, Graduate, Stockbridge  
First day of classes  
Holiday  
*Monday class schedule will be followed*  
Holiday  
Holiday  
Counselling period begins (classes not suspended)  
*Thursday class schedule will be followed*  
Counselling period ends  
Thanksgiving recess begins after last class  
Classes resume  
Last day of classes  
Final examinations begin  
Last day of final examinations, semester ends

|      |       |    |
|------|-------|----|
| Wed. | Sept. | 1  |
| Thu. | Sept. | 2  |
| Mon. | Sept. | 6  |
| Wed. | Sept. | 8  |
| Mon. | Oct.  | 11 |
| Thu. | Nov.  | 11 |
| Mon. | Nov.  | 15 |
| Tue. | Nov.  | 16 |
| Sat. | Nov.  | 20 |
| Wed. | Nov.  | 24 |
| Mon. | Nov.  | 29 |
| Wed. | Dec.  | 15 |
| Thu. | Dec.  | 16 |
| Wed. | Dec.  | 22 |

### 1977

Registration Day-Undergraduate, Graduate, Stockbridge  
First day of classes  
Holiday  
*Monday class schedule will be followed*  
Spring vacation begins after last class  
Classes resume  
Holiday  
*Monday class schedule will be followed*  
Counselling period begins (classes not suspended)  
Counselling period ends  
Last day of classes  
Final examinations begin  
Last day of final examinations, semester ends  
Commencement

|      |      |    |
|------|------|----|
| Mon. | Jan. | 24 |
| Tue. | Jan. | 25 |
| Mon. | Feb. | 21 |
| Tue. | Feb. | 22 |
| Sat. | Mar. | 19 |
| Mon. | Mar. | 28 |
| Mon. | Apr. | 18 |
| Wed. | Apr. | 20 |
| Mon. | Apr. | 25 |
| Sat. | Apr. | 30 |
| Wed. | May  | 11 |
| Thu. | May  | 12 |
| Wed. | May  | 18 |
| Sat. | May  | 21 |

### Associated Dates:

Rosh Hashanah Sept 25-26; Yom Kippur Oct 4; Easter April 10.





## Admissions

### 1977

Registration Day-Undergraduate, Graduate, Stockbridge  
First day of classes  
Holiday  
Monday class schedule will be followed  
Holiday  
Holiday  
Counselling period begins (classes not suspended)  
Friday class schedule will be followed  
Counselling period ends  
Thanksgiving recess begins after last class  
Classes resume  
Last day of classes  
Final examinations begin  
Last day of final examinations, semester ends

|      |       |    |
|------|-------|----|
| Wed. | Aug.  | 31 |
| Thu. | Sept. | 1  |
| Mon. | Sept. | 5  |
| Wed. | Sept. | 7  |
| Mon. | Oct.  | 10 |
| Fri. | Nov.  | 11 |
| Mon. | Nov.  | 14 |
| Tue. | Nov.  | 15 |
| Sat. | Nov.  | 19 |
| Wed. | Nov.  | 23 |
| Mon. | Nov.  | 28 |
| Wed. | Dec.  | 14 |
| Thu. | Dec.  | 15 |
| Wed. | Dec.  | 21 |

### 1978

Registration Day-Undergraduate, Graduate, Stockbridge  
First day of classes  
Holiday  
Monday class schedule will be followed  
Spring vacation begins after last class  
Classes resume  
Holiday  
Monday class schedule will be followed  
Counselling period begins (classes not suspended)  
Counselling period ends  
Last day of classes  
Final examinations begin  
Last day of final examinations, semester ends  
Commencement

|      |      |    |
|------|------|----|
| Mon. | Jan. | 23 |
| Tue. | Jan. | 24 |
| Mon. | Feb. | 20 |
| Tue. | Feb. | 21 |
| Sat. | Mar. | 18 |
| Mon. | Mar. | 27 |
| Mon. | Apr. | 17 |
| Wed. | Apr. | 19 |
| Mon. | Apr. | 24 |
| Sat. | Apr. | 29 |
| Wed. | May  | 10 |
| Thu. | May  | 11 |
| Wed. | May  | 17 |
| Sat. | May  | 20 |

#### Associated Dates:

Rosh Hashanah Sept. 13-14; Yom Kippur Sept. 22; Easter March 26

### Freshman

Applications for admission to the Amherst campus may be obtained from the Admissions Office. Applications for the Boston campus may be obtained from the Admissions Office in Boston. See the final pages of this *Bulletin* for addresses. If you were or are enrolled as a full-time post-secondary student, you must apply as a Transfer student.

### How to File

Fill out the application carefully, answering all questions. *Submit it to your Guidance Counselor* who will complete and forward it to the University with a transcript of your grades. Do not mail the application directly to us yourself. (Older students and Veterans are exempt from this provision although they must assume the responsibility for ensuring that an "official transcript" is submitted by stated deadlines.)

### When to File

Applications should not be submitted until the first set of senior year grades are recorded. Do not wait for SATs to be taken and on file, however.

### Deadlines

Applications must be RECEIVED AND COMPLETE (including SATs, transcript, and related documents) not later than:

|            | Fall Semester | Spring Semester |
|------------|---------------|-----------------|
| Mass. Res. | Mar 1         | Oct 15          |
| All Others | Feb 1         | Oct 15          |

### SAT Test Date Deadline

To be considered for the Fall Semester, SATs must be taken on or before the January test date to ensure that results will be received by the deadline unless wishing to be considered on the basis of Junior year SATs.

### If You Previously Applied for Admission

If you applied for admission to the Amherst campus in the past two years and have not been in full-time enrollment at another college, it is NOT necessary to file a new application. Write and request "Reactivation" of your previous application (by the stated deadline). In your letter, please chronologically detail what you have been doing in the interim.





### Recommendations

Although recommendations are not required, if submitted, we prefer information that will provide us insights into your academic and vocational potential.

### Application and Other Fees

There is a non-refundable Application Fee of \$10 for Massachusetts residents and \$25 for non-residents. A \$15 non-refundable Matriculation Fee is due within 15 days after notification of acceptance. Subsequently, a \$30 non-refundable Summer Counseling (orientation) fee will become due. Further information on costs is available from Financial Aid Services. For the coming academic year, single Massachusetts residents attending the University and living on campus will normally incur costs of \$2200 to \$2700 per year. This includes tuition and fees, room, board, personal expenses, books, and supplies and the fees noted above.

### Required Tests

All applicants are required to submit results of the Scholastic Aptitude Tests (SATs) administered by the College Entrance Examination Board. Although Achievement Tests are not required of Massachusetts residents, it is strongly recommended that applicants take three, of which one should be English Composition.

College Board Test Reports must be sent directly to the University from the College Board Test Center and should also be included on the high school transcript. Applicants must ensure that they take SATs early enough to meet application deadlines. The University's Amherst campus College Board Number is 3917.

Out of-state students are required to take three Achievement Tests, one of which must be English Composition, in addition to SATs.

Foreign students are required to submit SATs and TOEFL (Test of English as a Foreign Language).

### Optional Tests

#### Advanced Placement

Advanced placement and credits towards graduation will be awarded to candidates who obtain scores of 4 and 5 on the College Entrance Examination Board Advanced Placement Test; scores of 3 are given credit on a departmental basis. Candidates seeking advanced placement and credit towards graduation in foreign languages and rhetoric are

advised to take the CEEB Foreign Language Achievement Test and English Composition, respectively.

The College-Level Examination Program (CLEP) enables students to earn college credit-by-examination. Anyone may take CLEP tests to demonstrate his or her college-level competency no matter when, where, or how this knowledge has been acquired; through formal study, private reading, employment experience, non-credit courses, adult classes, TV, radio, cassette courses, military, industrial, business training, or advanced work in regular high school courses. CLEP tests are administered at more than 500 test centers and are given the third week of each month. Fall Semester applicants should plan to take the exams, if at all, not later than April of the year of entrance. Your high school guidance office will have additional details about CLEP, or you may write to CLEP, Box 592, Princeton, NJ 08540.

The University recommends students take advantage of the credit opportunities provided through these two programs.

#### Mathematics Requirements

Prospective physical science or mathematics majors should, if possible, offer two years of algebra, one year of plane geometry, and one-half year of trigonometry. Preparation in analytic or solid geometry, chemistry, physics, and introductory calculus is also strongly recommended.

Prospective engineering majors should offer two years of algebra, one year of plane geometry, and one-half year each of trigonometry and solid geometry. Chemistry and physics are also advised.

Any student deficient in the mathematics requirements should plan to make it up during the summer prior to entrance or should expect to take five years to complete the college course.

#### Foreign Language Requirement

The College of Arts and Sciences stipulates intermediate language proficiency as a graduation requirement. At least three years of secondary school language preparation will be advantageous. Students who receive a score of 600 or higher on a language Achievement Test will gain 6 credits in that language and will be exempt from the language requirement. Students who have completed the fourth level of one language or the third level of one language and the second level of a

second language are exempt from the language requirement.

The exceptional candidate whose secondary preparation is not within the framework of the above recommendations may be considered for admission. Suitability for admission will be based on other intellectual aptitudes and achievements and readiness for the University curriculum.

### Entrance Categories

Again, this year we expect a greater number of qualified applicants to apply than we are able to accept for regular September enrollment. Therefore, we are offering several alternative entrance possibilities to provide maximum admission opportunities.

#### Regular Entrance

Freshman applicants accepted for enrollment in September (Fall Semester).

#### Delayed Entrance

In recognition that time spent away from school can be valuable to a student in determining educational goals, applicants accepted for September ("Regular Entrance") may request to delay their date of enrollment, with subsequent guarantee of admission, for six months to two years. If you wish to elect this option, you must do so after you have been notified of acceptance. Further information will be included with acceptance material.

### Candidates' Reply Date

The University participates in the Candidates' Reply Date option which permits an accepted applicant to delay notification of intention to enroll until May 1.

### Interviews

An interview is not part of the admission process since it is impossible to interview all applicants. Personal conferences will be scheduled for applicants who have questions which cannot be resolved by correspondence or printed literature. Please contact the Admissions Office for an appointment.

#### Visits to the Campus

Recognizing the importance of first-hand knowledge of colleges you are considering, we encourage applicants to visit the Amherst campus. Group information sessions are held on Friday afternoons in the Fall beginning in October. The Admissions Office is not open on Saturdays.

**Guided Tours**

Through the University Guide Service, ARCON, guided tours are available during the regular academic year, except during University vacations, on weekdays from 1:30 to 3:30 p.m., Saturdays from 9 a.m. to 12:30 p.m., and Sundays from 1 to 3 p.m. Special arrangements for campus tours during the academic year may be made by writing to ARCON, University Guide Service, Murray D. Lincoln Campus Center, University of Massachusetts, Amherst, MA 01002, or telephoning (413) 545-0012. Tours originate from the Information Desk, concourse level of the Campus Center.

**High School Visits**

Within budget limitations each public high school in Massachusetts and some private and parochial schools will be visited between September and mid-November by an Admissions Office staff member. These visits provide an opportunity for the staff and guidance counselors to discuss matters of mutual interest and concern and to meet, if possible, with seniors to talk about the University.

**Notification of Decision**

In most cases Freshman applicants will be notified by mid-April of the action taken on their application for Fall enrollment and by November 1 for Spring enrollment. Those with outstanding academic records may receive earlier notification. This early notification should reassure the well-qualified applicant regarding college entrance and enable the student who has selected the University to make plans. If accepted at an early date, however, you are under no pressure to make a final decision in regard to choice of college before the Candidate's Reply Date. In this way the burden of multiple applications on high school guidance counselors and college admissions officers may be lessened.

**New England Regional Student Program**

Students who are legal residents of any of the other New England states may be eligible for consideration for admission under auspices of the New England Regional Student Program. The NERSP provides an opportunity to earn a degree in certain curricula not offered at the resident's own state institution at the tuition rate for Massachusetts residents. Check with high school guidance counselor.

**Veterans**

Veterans whose Active Duty is credited to Massachusetts, or who subsequent to release have established Massachusetts as their domicile, are high school graduates or equivalent, and who have not attended another college full-time since release from A.D., will be considered for admission primarily on the basis of SATs. Other Veterans will be considered under regular admission policies. If previously enrolled in an institution of higher education, before or after A.D., a transcript of credits attempted and earned MUST be submitted for this application to be considered complete. Credits earned prior to A.D. will not affect enrollment eligibility. Credits earned after A.D. may affect enrollment eligibility.

A DD 214 must be submitted. (If still on A.D., submit copy when available.)

The Veterans' Affairs Office is located in Room 240, Whitmore Administration Building, telephone (413) 545-1346. This office has the most current data regarding laws, policies and procedures for veterans. The Veterans' Affairs Office acts as a liaison between the individual veteran and various governmental agencies (i.e., Veterans' Administration and Veterans' Services). The Veterans' Office has a job bank, a short-term loan fund and other services to aid the veteran.

**Out-of-State Applicants**

To accommodate as many qualified legal residents of Massachusetts as possible, the University limits out-of-state undergraduate enrollment to 5%. This makes freshman admission extremely competitive to non-residents. See Section on "Residence Status." Note also SAT requirements and application deadline.

**Handicapped Students**

An office has been established to assist academically qualified students who have physical disabilities. Students, parents, and counselors concerned should contact Office of Handicapped Student Affairs, 229D Whitmore, telephone (413) 545-0892.

**Fields of Study NOT Offered**

While the University offers nearly 100 different major fields of study, the following which are commonly requested, are not available: Aeronautical Engineering, Architecture, Business Education, Criminology, Dental Technology, Oceanography, Occupational Therapy, Photog-

raphy, Physical Therapy, Recreational Therapy, Secretarial Sciences. See Catalog for full academic listings.

**Freshman Orientation**

Every student entering as a freshman must attend a two-and-one-half-day orientation program at a specified time during the summer prior to entrance. The program consists of academic placement testing, counseling, and pre-registration for courses to be taken during the coming semester and orientation to social and academic opportunities available to undergraduates. Each student is assigned a faculty adviser who will help in the selection of courses and planning of a class schedule. On the final day of each of these periods, a special program is held for parents so that they may learn more about the University. Each freshman attending the summer orientation program on the Amherst campus will pay a non-refundable fee of \$30 to cover the cost of meals, housing, testing, and counseling. (See Transfers section for information on transfer orientation.)

**Visiting Students**

The University is not able to accommodate students from another institution who wish to spend only a semester or a year on this campus, except through organized exchange programs. Students who wish to take courses at the University in a visiting capacity are urged to contact the Division of Continuing Education.

**Preparatory Studies**

Your secondary school preparation must indicate your capacity to handle the quality of scholastic work which the University has established as its standard of achievement. A prerequisite for admission is the satisfactory completion of a four-year high school course or its equivalent. A minimum of 16 units should be offered, distributing according to the following recommendations:

|                                 |    |
|---------------------------------|----|
| English                         | 4  |
| College preparatory mathematics | 3* |
| Foreign language                | 2  |
| U.S. History                    | 1  |
| Laboratory science              | 1  |

\*Preferably two years of algebra and one of plane geometry

A minimum of five other units should be offered in the areas of mathematics, science, foreign language, history and social studies, or free electives (not more than four units).



### Minority and Low-Income Student Admission Programs

In cooperation with the Massachusetts Commission Against Discrimination, an Affirmative Action program has been developed to provide information and assistance to minority students in making application for admission.

"Minority" individuals are defined in Presidential Executive Order 11246 as including Afro-American, American Indian, Oriental American, and Spanish-surnamed people.

CCEBS (Committee for the Collegiate Education of Black Students) seeks to recruit and accept minority and low-income white students into the University through a special admissions process. The CCEBS student shares all the responsibilities of any other student but is offered individually focused academic, financial, and personal support services, if needed, to experience optimum progress and adjustment within the University.

BCEP (Bilingual Collegiate Program) is designed primarily for Spanish-speaking individuals and is similar to the program above.

### Transfers

Any student who has been previously enrolled in an institution of higher education and completed ten or more semester hours is considered a transfer and must file a transfer application form. The University considers for transfer only those applicants who have completed a minimum of 54 transferable semester credits. Only in a very limited number of specialized curricula are applicants eligible for consideration with less than 54 credits.

Priority is given to transfer applicants from Massachusetts who have completed two years in a transfer program at any of the Commonwealth's state or city supported community and junior colleges. Remaining transfer vacancies are filled on a competitive basis by candidates seeking transfer from other institutions. Transfer vacancy for the non-resident (out-of-state and foreign) is extremely limited.

A minimum of 45 semester credits must be taken in residence at the University, and all University, college, and major requirements must be completed in order to receive a bachelor's degree.

Applications must be received and complete prior to April 1 for fall semester

consideration, and prior to October 15 for spring semester consideration. It is the student's responsibility to be sure that all transcripts from each college attended, including the most current, have been forwarded to the Office of Transfer Affairs before the stated deadline dates. High school record and SAT scores are not required of transfer applicants.

Decisions are made late in the semester prior to proposed entrance. A tentative evaluation of transfer credits is sent to the student shortly after acceptance.

Campus visitations and interviews with the staff of the Office of Transfer Affairs are encouraged when at all possible if questions or problems arise concerning applications. During certain times in the admissions year, however, personal conferences must be limited to situations where urgent problems exist. Campus tours are available daily when school is in session from the University Guide Service in the Campus Center (545-2707).

Every student entering as a transfer is

required to attend an orientation and pre-registration session during the summer prior to entrance. At this time a faculty adviser is available to each student to assist in selection of courses. Advanced placement testing also takes place at this time and a general orientation to the social and academic opportunities of the University is provided. Transfer student who enter in the spring semester will pre-register in November. A non-refundable \$15 fee is required of each transfer to cover the costs of this program.

### Physical Exam

Physical examination by a personal physician is required of each entering freshman, transfer, re-entering student and student participating in athletics. Physical report forms for this examination will be mailed to you with your acceptance material and must be completed and returned to the University Health Services ten days before the opening of the semester. Evidence of successful smallpox vaccination and active tetanus immunization is required



# Residence Status

These rules and regulations shall apply to the classification of students at the University of Massachusetts as Massachusetts or non-Massachusetts students for tuition purposes.

## Section 1. Definitions

1) **ACADEMIC PERIOD** — A term or semester in an academic year or a summer session, as prescribed by the Board of Trustees or under their authority.

2) **CONTINUOUS ATTENDANCE** — Enrollment at the University for the normal academic year in each calendar year, or the appropriate portion or portions of such academic year as prescribed by the Board of Trustees or under their authority.

3) **DOMICILE** — A person's true, fixed and permanent home and place of habitation, where he intends to remain permanently or for an indefinite time.

4) **EMANCIPATED PERSON** — A person (a) who has attained the age of 18 years, or (b) if under 18 years of age, whose parents have entirely surrendered the right to the care, custody and earnings of such person and who no longer are under any legal obligation to support or maintain such person, or (c) a person who has no parent. If none of the foregoing definitions apply, said person shall be deemed an "unemancipated person."

5) **HIS** — Shall apply to the female as well as the male gender.

6) **PARENT** — With respect to a person (in the case of an adopted person, inserting the adjective "adoptive" before the words "father" and "mother" wherever used):

- a) the person's father;
- b) if the person's father dies, either the legal guardian or if no legal guardian is appointed, the person's mother;
- c) if neither the father nor mother is living and no legal guardian is appointed, the person who then stands *in loco parentis* to the person;
- d) if the father and mother are divorced, the person to whom legal custody of the person is awarded;
- e) if the father and mother are divorced, separated or unmarried and legal custody has not been awarded, the father or the mother, as the case may be, with whom the person lives or, if he lives with neither and the father is living, the father.

7) **RESIDENCE** — A place of habitation.

## Section 2. Rules for Determination of Domicile

1) Domicile is not acquired by mere physical presence in Massachusetts while the person is carrying on a course of study at the University or while the person is engaged in employment for a specified term unless Massachusetts is otherwise the domicile of the person.

2) Domicile at birth may be changed thereafter, by action of the parent in the case of an unemancipated person or by action of the person himself in the case of an emancipated person.

3) A person claiming Massachusetts as his domicile shall furnish evidence to support such claim. The burden of proof in all cases is upon the person making the claim. The following shall be of probative value, although not necessarily conclusive, in support of a claim of domicile within Massachusetts:

- a) Birth certificate;
- b) Motor vehicle registration and/or operator's license;
- c) Voting or registration for voting;
- d) Certified copies of Federal and State Income Tax returns;
- e) Property ownership;
- f) Continuous physical presence in Massachusetts during periods when not enrolled as a student;
- g) Permanent employment in a position not normally filled by a student;
- h) Reliance on Massachusetts sources for financial support;
- i) Former domicile in Massachusetts and maintenance of significant connections therein while absent;
- j) Domicile of parent within Massachusetts.

Evidence submitted in support of an assertion of domicile or of parental relationship shall be in such form as the Treasurer of the University or his designee may require. Copies of official records or documents shall be authenticated by a proper officer. Assertions of fact made other than by an authenticated copy of an official record shall be certified as to accuracy and completeness by the person submitting the same.

## Section 3. Proof of Parental Relationship

A person asserting that he is an emancipated person shall furnish evidence to

support such assertion. Such evidence may include:

- a) Birth certificate or any other legal document that shows place and date of birth;
- b) Legal guardianship papers — court appointment and termination must be submitted;
- c) Statements of the person, his parent(s), guardian(s), or others certifying no financial support;
- d) Certified copies of Federal and State Income Tax returns filed by the person and his parent(s);
- e) Where none of the foregoing can be provided, an affidavit of the emancipated person in explanation thereof and stating fully the grounds supporting the claim of emancipation.

## Section 4. Rules for Classification

1) Every emancipated person applying for admission to the University who has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the date of his application and has established a domicile in Massachusetts shall be eligible for classification as a Massachusetts student for tuition purposes.

2) Every unemancipated person applying for admission to the University, whose parent has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the date of application and has established a domicile in Massachusetts, shall be eligible for classification as a Massachusetts student for tuition purposes.

3) Every emancipated person seeking a change in classification who has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the beginning date of the academic period for which he registers and has established a domicile in Massachusetts shall be eligible for classification as a Massachusetts student for tuition purposes for such academic period.

4) Every unemancipated person seeking a change in classification, whose parent has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the beginning date of the academic period for which the person registers and has established a domicile in Massachu-



# Family Educational Rights and Privacy Act

setts, shall be eligible for classification as a Massachusetts student for tuition purposes for such academic period.

5) A person having his domicile elsewhere than in Massachusetts shall not be eligible for classification as a Massachusetts student for tuition purposes except as herein provided.

6) Any person who is registered at the University as a Massachusetts student shall be eligible for continued classification as a Massachusetts student for tuition purposes (until attainment of the degree for which he is then enrolled) during continuous attendance at such institution.

7) A member of the Armed Forces of the United States and his spouse and unemancipated children shall, while he is on active duty and stationed in the Commonwealth of Massachusetts, be eligible for classification as Massachusetts students for tuition purposes.

## Section 5. Change in Classification

No application for change to classification as a Massachusetts student for tuition purposes submitted later than the first day of classes shall affect a classification during the then current academic period.

## Section 6. Penalty for Misrepresentations

Misrepresentation in or omission from any evidence submitted of any fact which if correctly or completely stated would be grounds to deny classification as a Massachusetts student for tuition purposes shall be cause for exclusion or expulsion from or other disciplinary action by the University.

## Section 7. Appeals

Appeal from a determination denying classification as a Massachusetts student shall be initiated by filing a written request with the Treasurer of the University or his designee specifying the particular grounds for said request.

## Section 8. Miscellaneous

Nothing contained herein shall be construed as limiting or prohibiting the authority of the Board of Trustees to waive or reduce tuition charges.

## Policy and Procedures

A. On January 1, 1975, President Ford signed into law the Family Educational Rights and Privacy Act (Public Law 93-380). This law was developed to allow present or former students, at educational institutions access to educational records kept on them, as well as basic protections of privacy of their records. The law does not apply to applicants seeking admission to the University. The law applies to "educational records" defined as "records, files, documents, and other materials which . . . contain information directly related to a student" and "are maintained by an educational agency or institution." The law specifically exempts personal records kept by instructional, supervisory, and administrative staff, as long as those records are not accessible or revealed to any other person except a substitute; records of a law enforcement unit; records of employees of an educational institution; and records which are created or maintained by a physician, psychiatrist, psychologist, or other recognized professional or paraprofessional, and which are created, maintained or used only in connection with the treatment of the student.

The law specifically grants the following rights to access:

1. The right to be provided a list of the types of educational records which are maintained by the institution and which directly relate to students;
2. The right to inspect and review the content of those records;
3. The right to obtain copies of those records, which may be at the expense of the student (but not to exceed the actual cost to the educational institution of reproducing such copies);
4. The right to a response from the institution to a reasonable request for explanations and interpretations of those records;
5. The right to an opportunity for a hearing to challenge the content of those records;
6. If the educational record of a student includes information on more than one student, the right to inspect or review only that part of

the material or document which relates to such student.

B. The University develops and maintains several types and varieties of educational records on students. A list of what types of records are maintained by the University, where they are kept, what University official has major responsibility for those records, who has access to those records and why, and what it will cost to obtain a copy of those records, has been developed. A copy of the complete list is available for inspection in the following locations:

Admissions Office  
Whitmore Administration Building

Financial Aid Office  
Whitmore Administration Building

Dean of Students Office  
Whitmore Administration Building

Vice Chancellor for Student Affairs  
Office  
Whitmore Administration Building

Vice Chancellor for Academic Affairs  
Office  
Whitmore Administration Building

Undergraduate Registrar  
Whitmore Administration Building

Graduate Registrar  
Graduate Research Center

Continuing Education Registrar  
Hills North

Student Development Center  
Berkshire House

Southwest Area Director's Office  
J. Q. Adams Lobby

Central Area Director's Office  
Hills North

Orchard Hill Area Director's Office  
Grayson House

Northeast Area Director's Office  
Leach House

Sylvan Area Director's Office  
Cashin House

Ombudsman's Office  
Campus Center

Legal Services Office  
Campus Center

Student Senate Office  
Student Union

Library, Reference Desk  
Main Floor, Library

B.D.I.C.  
Goodell Building

University Without Walls  
Wysocki House

University Year for Action  
Arnold House

CCEBS Office  
New Africa House

Center for Outreach Programs  
Goodell Building

College of Arts and Sciences  
Machmer Hall

Education, Dean's Office  
Hills South

Food and Natural Resources,  
Dean's Office  
Stockbridge Hall

Humanities and Fine Arts, Dean's Office  
South College

Natural Sciences and Mathematics,  
Dean's Office  
South College

Social and Behavioral Sciences, Dean's  
Office  
South College

Business Administration, Dean's Office  
School of Business Administration

A complete copy of the HEW regulations and the University of Massachusetts/Amherst procedures and policies regarding the Family Educational Rights and Privacy Act is available for inspection at any one of the offices listed above.

C. The institution maintains records in many mediums, including but not limited to: handwriting, print, tapes, microfilm, and microfiche.

D. Access to Records: Students can request to see any of their educational records covered and defined by the Family Educational Rights and Privacy Act. The request to see such records should be made at the specific department which maintains those records.

If possible, a student will be allowed access to the records immediately. In any case, the department must allow access to the file within 45 calendar days.

E. Procedures to Follow to Access a Record:

1. A request by a student or agency to inspect a record shall be made in writing to the institutional office

which maintains the record. Each office maintaining records has its own procedures to receive and process such requests.

2. Every office is obligated to inform the student when the requested record will be made available. (This date must be no more than 45 days after the receipt of the request.)
3. Every office is obligated to tell a student who has accessed his/her record and why.
4. Every office is obligated to maintain a record of the persons or agencies who have had access to the record.
5. Students are obligated to properly identify themselves (student I.D.) before being shown their records.
6. Students are obligated not to interfere with the operation of the office in which the record is being maintained.
7. Students are obligated to examine the record during reasonable hours at the place the record is maintained.
8. Prior to giving a student his/her record for examination all confidential data will be removed.
9. The examination of the record shall be supervised.
10. Copies of records shall be transmitted to the student upon payment of the established fee for issuing such copies.

F. Reviewing Educational Records: Educational records will be reviewed by the department head, or his/her representative, periodically, and also at the request of the student. If the student wishes something inappropriate removed from, or changed in the record, and this cannot be resolved at the department level, the student has a right to an appeal through the University's appeal process.

The academic record (transcript) of a student is maintained in perpetuity by the institution. No other record is officially designed as a permanent record and will be expunged in accordance with the laws of the State, or at the discretion of the custodian of the record.

G. Procedures for Challenging the Con-

tent of Educational Records: After reviewing a record, a student has a right to challenge the contents of the record as being inaccurate, misleading or otherwise in violation of the privacy or other rights of the student. A student may not challenge the correctness of a grade which has been assigned to his/her performance in a course but may challenge the accuracy of the recording of the grade.

1. Upon deciding that some aspect of his or her record is inappropriate, the student shall so inform the designated person in the office where his or her records are maintained and shall attempt to resolve the problem through informal discussions with such person and the person in charge of that office.
2. If no agreement is reached through informal discussions, the student may submit in writing to the institutional director of the Family Educational Rights and Privacy Act, a request for a hearing in order to challenge the contents of the record.

H. Hearing and Appeal Procedures: A request for a formal hearing must be filed in writing with the Coordinator for the implementation of the Family Educational Rights and Privacy Act on the Amherst campus:

Michael A. West, Chancellor's Office  
Whitmore Administration Building

The specific challenge to the content of the student's record should be clearly articulated in the complaint. The complaint must be filed within 45 calendar days after the student has requested a change to his/her record.

Upon receipt of a written request for a formal hearing, the Coordinator of the Family Educational Rights and Privacy Act shall within five calendar days:

1. Notify each party involved, in writing, that a request for a formal hearing has been requested; and provide to each party involved, the substance of the complaint;
2. Appoint at least three officials of the University who do not have a direct interest in the outcome of the challenge, to be hearing officers, one of whom shall be designated as

the Chairperson of the hearing panel.

3. It is the responsibility of the Chairperson of the hearing panel to:
  - a. Conduct a hearing on the challenge within 21 calendar days following the request for the hearing;
  - b. Allow the student a full and fair opportunity to present evidence relevant to the context of his/her educational records;
  - c. Report to the Family Educational Rights and Privacy Act Coordinator, a written decision of the hearing panel, within 21 calendar days of the conclusion of the hearing.

The campus Family Educational Rights and Privacy Act Coordinator shall further:

- a. Provide to the student and departmental representative involved in the challenge, a copy of the written decision of the hearing panel;
- b. Secure from a department head, when appropriate, written verification that the decision of the hearing panel has been carried out.

I. Directory and Public Information: The University defines directory information as a student's name, local address, home address, major, and local telephone number. This information may be printed annually in the student telephone directory.

The University defines public information as the above directory information, as well as date and place of birth; acknowledgment of a student's participation in officially recognized activities and sports, weight and height of members of athletic teams, date(s) of attendance, degrees, certificates, awards received, and the most recent previous educational agency or institution attended by the student, and the dollar amount of money earned on the state or state trust fund payroll.

The University will make public some or all of this information, usually in the student telephone directory, unless the student specifically requests in writing that his/her prior consent be obtained.

Requests by students to suppress from public distribution the above-mentioned information are to be made annually.

J. Other Rights and Requirements of this Legislation: In addition to the above, the law sets forth other rights and requirements regarding educational records maintained on students:

1. The University cannot require students to waive any rights granted under this legislation, as a condition of admission, receipt of financial aid, or receipt of any other services or benefits.
2. Parents' financial records and related parental financial information shall not be released to students. Any institutional office maintaining such records shall either store such records in a file separate from records subject to review or conspicuously stamp such records "CONFIDENTIAL - NOT TO BE RELEASED."

Confidential evaluations and recommendations of students placed in education records prior to January 1, 1975 need not be released to students. All other education records of a particular student shall be open for inspection by that student unless access is restricted as follows:

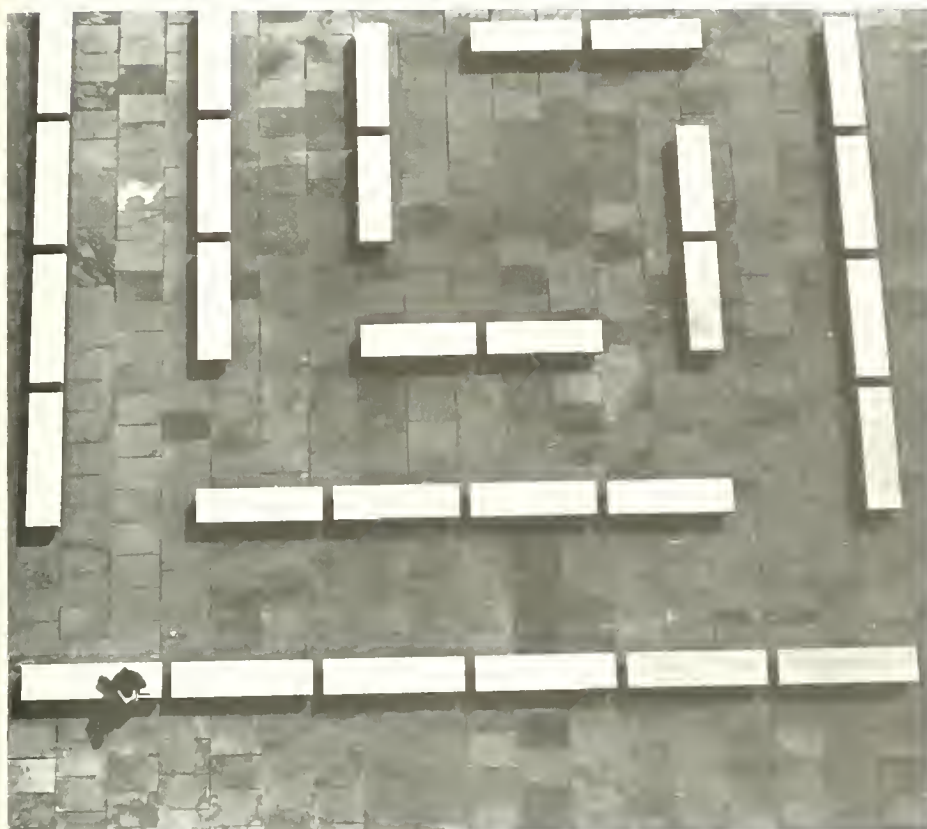
A student may waive his or her right of access to evaluations and recommendations submitted on or after January 1, 1975, provided however, that the student must, upon request, be notified of the name of each person who has submitted such a confidential evaluation or recommendation; such evaluations and recommendations to be used only for the purpose intended; and a waiver may not be required as a precondition of admission to the institution or receipt from the institution of financial aid or any other services or benefits.

3. The University may not permit access to or release of a student's educational records, or personally identifiable information contained therein (other than directory and public information), to third parties,

without the student's consent, except to the following:

- a. Other University officials who have a legitimate educational interest in a student's record;
  - b. Authorized representatives of the Comptroller General of the United States, the Secretary of HEW, the Commissioner of Education, the Director of the National Institute of Education, the Assistant Secretary for Education, or State Educational Authorities;
  - c. In connection with a student's application for, or receipt of financial aid;
  - d. State and local officials to which such information is specifically required under state statutes;
  - e. Organizations conducting studies for, or on behalf of, educational institutions for the purpose of developing, validating, or administering predictive tests, student aid programs, and improving instruction, provided that the identity of students is not revealed to other than representatives of such organizations;
  - f. Recognized accrediting organizations carrying out their accrediting functions;
  - g. Parents of a student who is dependent upon such parents for Federal Income Tax purposes;
  - h. In compliance with judicial order, or pursuant to any lawfully issued subpoena, upon condition that the student is notified of all such orders or subpoenas in advance of compliance therewith; and,
  - i. In connection with an emergency situation, if the knowledge of such information is necessary to protect the health or safety of a student or other persons.
4. The University must maintain a record, to be kept with the educational records of each student which will indicate all parties, other





than those specified above, which have requested or obtained access to a student's record, and the legitimate interest that such parties have in obtaining such information. This record will be available only to the student, the University personnel responsible for the maintenance of the records, and persons and organizations listed in #3 above.

5. Third parties may not receive information from student's educational records (other than directory and public information), unless and until a student requests in writing that these records be released. Record released to any organization, agency, or individual shall be transmitted with a letter informing the recipient that such information is to be used only by those individuals directly involved in the deliberations warranting the request. In addition, the recipient shall be notified in writing that if compliance

with this requirement is not acceptable all records shall be returned, unused, to the institution.

6. The University must make public notice of the categories which it determines to be directory information, and allow the student a reasonable period of time to inform the University that any or all of the information designated should not be released without the student's consent.
7. Complaints regarding violations of this act, or its regulations, may be submitted in writing to Mr. Thomas S. McFee, Room 5660, Department of HEW, 330 Independence Avenue SW, Washington, DC 20201 (202-245-7488). Complaints must be received no later than 180 days from the date of the alleged violations.

K. These guidelines will be summarized annually in a publication of the institution.

The University's official "Undergraduate Academic Regulations" are updated and published each term in the *Schedule of Courses* distributed to every student prior to pre-registration. All students are expected to obtain a copy of these regulations and familiarize themselves with the content, since failure to be aware of a provision does not excuse a student from adhering to it. On the other hand, whenever a student feels that some special circumstance warrants an exception to a regulation, that student is encouraged to discuss the situation with his or her academic dean who can help the student work out an alternative.

Some of the more important aspects of the "Undergraduate Academic Regulations" are summarized below; interested persons should, however, check the latest edition of the *Schedule of Courses* for specific details.

### Classification of Students

Undergraduates may enroll in one of five categories:

1) **FULL-TIME STUDENTS.** Students who are admitted as candidates for a degree are normally designated as a member of a particular graduating class and are expected to make normal progress toward graduating with that class by carrying the minimum load of 12 or more credits each semester.

2) **REDUCED-LOAD STUDENTS.** Students who are admitted as candidates for a degree but who wish to carry a reduced load for a given term may request permission of their academic dean for exemption from the minimum load requirements. Such exemption is not granted ordinarily except upon the basis of health or critical personal or academic problems. Although reduced-load students carry less than the minimum load, the appropriate semester and cumulative quality point requirements for retention still apply, the semester counts as one of the 10 towards graduation, and all benefits, fees, and obligations applying to full-time students apply to them. Reduced-load students bear a regular Student I.D. card and continue to be assigned to a graduating class.

3) **PART-TIME DEGREE STUDENTS.** The category "Part-Time" is an original admissions category and is not designed as a category into which full-time students may revert for purposes of part-

time study. All academic regulations and standards for full-time students, including a 2.0 cumulative average apply to part-time students, with the exception of the requirement to complete 12 credits per semester to retain good standing and the rule limiting students to 10 semesters in residence. There are two categories of part-time students: Non-classified and special students. Information may be obtained from the Admissions Office.

- a) **Non-Classified:** Students who are admitted as candidates for a degree but who cannot devote full time to the pursuit of a degree will be designated as Non-Classified students. These students are billed by the credit, with other fees assessed only as appropriate to Special Students (see below) and they bear a Special Student I.D. card. Non-Classified students are not entitled to student benefits, other than counselling support. At pre-registration a special billing card must be filled out by the student and advisor.
  - b) **Special Students:** This classification is limited to University employees, others affiliated with the University and selected others (such as Amherst Regional High School seniors on request). A Special Student may be accepted for one or two courses on a non-continuing basis (Class designation "SP"). No academic advising or evaluation of academic credentials is offered to students in this category, nor are they entitled to any student benefits. Continuance is not automatic, but may be authorized at the discretion of the Undergraduate Admissions Office. A minimum cumulative average of 2.0 is required for eligibility to continue. These students bear a Special Student I.D. card.
- 4) **SECOND-MAJOR STUDENTS.** A student may earn a second major and have it recorded on the permanent record provided that:
- a) The second major is completed within the 10 semesters allowed for the completion of all graduation requirements, including the first or declared major;
  - b) A student files with the Registrar a formal certification from an authorized representative of the

second major that all requirements for that second major have been completed;

- c) The second major lies in the same school or college as the first or declared major or, if the second major lies in a school or college other than that of the first major, the student obtains formal certification from the academic dean of the second college that all requirements for graduation from that college have been satisfied.

5) **SECOND - BACHELOR'S - DEGREE STUDENTS.** Students may apply for Second-Bachelor's-Degree status in one of the following two categories:

- a) Students and graduates of this University who wish to earn a second bachelor's degree must complete a minimum of 30 additional credits, all of which must be in residence (i.e., students who want to work for two bachelor's degrees simultaneously do not have to complete one and then start the other anew). These students must make formal application through the Admissions Office.
- b) Graduates of other institutions who wish to earn a second bachelor's degree at this University must complete a minimum of 45 credits in residence at the University of Massachusetts. (Those students who have previously attended this

University will have their residency requirement handled on an individual basis.) These students must make formal application through the Admissions Office

#### Procedure

1) Students applying through the Admissions Office must obtain, prior to acceptance, the support of an authorized representative of a department and an academic dean in the school or college of the proposed second degree;

2) In order to validate the second bachelor's degree and have it recorded on the permanent record and diploma, a student must obtain a formal certification from an authorized representative of the second major that all requirements for that major have been completed, and a formal certification from the academic dean of the school or college awarding the second bachelor's degree that all requirements for graduation from that school or college have been satisfied.

#### Graduation Requirements

In order to be considered for a baccalaureate degree, a student must successfully attain or complete:

1) A minimum of 120 credits, at least 45 of which must be earned in residence. For this purpose, residence credits are defined as being credits earned for work done while registered on the Amherst or the Boston campus of the University of Massachusetts or while enrolled in one





## Housing

of the University's formal Exchange Programs. In addition, students must complete their final year in residence, residence in this sense meaning continuous enrollment and regular attendance in classes conducted on the Amherst campus.

2) A cumulative average of at least C (2.0). The official grading system runs from A (4.0) through F (0.0) and includes such options as Incompletes, Withdrawals, Audits, and Passes. A Pass/Fail option exists to encourage students to be venturesome in their choice of courses.

3) A major, constituting intensive or specialized work in a particular department, division, school, or college and consisting of the successful completion of at least 15 semester hours of credit in junior-senior courses in the area of study. The University offers some 100 majors, including Bachelor's Degree with Individual Concentration, a major which the student creates in conjunction with a faculty sponsor.

4) Core or distribution requirements, providing breadth to complement the depth of a major. Although these requirements vary from college to college, all schools require at least a minimal familiarity with the theory and practice of writing and speaking, and an introduction to the humanities and fine arts, the social and behavioral sciences, and mathematics and the natural sciences.

Various special programs, such as BDIC, University Without Walls, the Honors Program, the Inquiry Program, and Continuing Education offer special variations of the graduation requirements. The Honors Program in particular offers a number of options to students, including the Commonwealth Scholar Program, for students who wish to have their transcripts identify them as Honors students, the Departmental Honors Program for students who wish to obtain an honors citation from their major department, and Graduation with Distinction for students whose cumulative average and other attainments merit one of the various *cum laude* citations.

### Policy

Recognizing the educational advantages of both classroom instruction and extra-curricular experiences, and the great extent to which residence-hall living can contribute, the Board of Trustees of the University has adopted a policy which requires undergraduates to be housed in University residence halls.

### Exemptions

Exempt from this policy are married students; members of fraternities and sororities who have been authorized to reside in their respective houses (within approved maximum capacities); and students who commute from the homes of their parents (within a 40-mile radius of Amherst).

A student living in a University residence who seeks permission to live off campus should submit the request to the appropriate Area Director. All others should submit similar requests to the Housing Office before appearing on campus for registration. Very few exemptions of this type are granted yearly.

### Room Assignments

Residence halls are opened on the day before registration. Upperclass students have the opportunity to select rooms in the spring of the preceding year. Rooms are assigned in order of receipt of proper application. Notification of assignment is made in mid-August.

### Housing Plans

The University recognizes the desirability of providing a variety of living arrangements; hence, it offers three basic systems: "Traditional" residence halls, residential colleges, and suite- or apartment-style residence halls. All three plans offer opportunities for intellectual, cultural, and social activities, and all three include some coeducational units.

*The Central and Northeast Residence Areas* consist of 21 residence halls housing 4,000 students. A "traditional" residence hall is a house with a long-standing tradition of fellowship, unity, and loyalty. The traditional hall, by its very nature, provides opportunity for meaningful friendship in a relaxed atmosphere.

*The Orchard Hill Residential College*, housing approximately 1,300 students in four coeducational residence halls, represents a planned and conscious attempt

to make these residences more private, more quiet, and more academic in tone than most residential units. Each of the units within the college has student personnel and faculty as advisers who provide cultural as well as academic assistance and who coordinate the collegiate aspect of the academic program.

*The Southwest Residential College*, which houses 5,500 students in both high-rise and low-rise buildings, operates on the assumption that a "college" within a university may function to provide more effective small-group identities and a maximum of contact between the students and members of the faculty.

Special sections of selected courses are designated for residents of both residential colleges. Music and dramatic events, special lectures, and discussions take place in residence halls. Faculty Fellows of the college and students participate in as many of these activities as they find to their advantage.

*The Sylvan Residence Area* offers suite-type dormitories, affording students an opportunity to build close living relationships within small groups by sharing quarters in a suite- or apartment-style arrangement.

### Room Furnishings

Most residence hall rooms are provided with beds, mattresses and mattress covers, dressers, desks, desk chairs, closets, and mirrors. In addition, most residence halls have study lounges, kitchenettes, laundry facilities, and vending machines.

Each student is expected to provide pillow, linen, and blankets.

Most residence halls are equipped with room telephones. Students who choose to live in these residence halls are charged an additional fee per semester for the basic telephone service.

### Residence Hall Staff

#### AREA DIRECTORS

Each residence area is administered by an Area Director, to whom all staff personnel in a residence hall report; Area Directors, in turn, report to the Director of Residential Life. Area Directors plan and direct all student personnel administrative activities for the residence halls in a given campus residential area; supervise the professional staff and student assistants in the residence halls; advise elected officers and committee chairper-





sons in the residence halls; and provide individual and group advising.

#### HEADS OF RESIDENCE

The Heads of Residence are responsible to the Area Directors. They work jointly with the counselors and Area Directors in the operation of residence halls. They provide leadership and support to the residence hall student staff, facilitate the work of elected house government officers and committee chairpersons, serving as resource persons and discussing University expectations with them; provide individual and group advisement out of concern for the welfare of students within the residence halls; and carry out administrative responsibilities associated with the operational aspects of residence halls.

#### COUNSELORS

Counselors receive direct supervision from the Heads of Residence and general supervision from the Area Directors. Their duties include helping to establish a climate in which students feel free to seek assistance and in which the educational goals of the University are emphasized; counseling individual students in personal, social, and academic matters; working jointly with the Heads of Residence and house government in providing for the daily operation of the residence halls; interpreting and maintaining regulations with respect to student life on campus; and assisting the Heads of Residence with administrative tasks in the residence halls.

#### Room Rent

Residence halls are constructed, equipped, and maintained, at no cost to the taxpayers, through funding provided by bonds issued by the University of Massachusetts Building Authority. Room rents are fixed so as to provide a fund sufficient to pay building and operating costs, i.e., to amortize the bonds. In order to meet payments on the various residence hall bond issues and to assure the minimum possible room rent, the University must maintain maximum occupancy of residence halls. This requires that a student be held financially responsible for room rent once registering for and occupying a room in a residence hall.

#### Apartments for Married Students

The University of Massachusetts owns and manages 395 apartments for married students in three apartment complexes: Lincoln (105 units), University (50 units), and North Village (240 units), all unfurnished except for appliances (stove and refrigerator). Utilities are included with the rent. Assignment of apartments is made through application (earliest application date given first consideration) or according to circumstances with regard to the number of current vacancies. A tenant is expected upon commencement of the lease (one year) to pay a security deposit equal to one month's rent. Applications and specific information may be obtained from the Married Student Housing Office, Whitmore Administration Building.

#### Off-Campus Housing

A card file of off-campus house, apartment, and room rentals is maintained by the Off-Campus Housing Office. Also provided is information about local realtors, garden apartment developments, classified newspaper rentals, and persons seeking roommates. Every effort is made to assist students to obtain off-campus housing; however, a personal visit is usually necessary for the student to review rental listings because of daily changes and because all off-campus arrangements must be made by the parties involved. Brochures and other information may be obtained from the Off-Campus Housing Office, Munson Hall.

#### Insurance

It is not possible for the University to carry insurance which will compensate students or their families for losses suffered on the campus due to such hazards as fire, theft, or water damage. For most families such insurance is highly desirable, either as an extension of present home insurance or as a special contract.

#### Food Services

The University Food Services cater the food requirements of the University except those services offered by the Campus Center Complex. Four dining commons serve students on a five- or seven-day meal ticket contract. All freshmen, sophomores, and juniors residing in University residence halls are required to purchase a meal ticket. Either a 10-, 15- or 19-meal ticket, which is valid for either two or three meals per day, may be selected. Students who are members of fraternities or sororities may be permitted to board at their respective fraternities or sororities, upon receiving written authorization from the Director of Greek Affairs. Those not required to board or campus may eat at a dining commons or a cash basis; they may purchase one of the regular meal tickets, or they may purchase a five-day single-meal ticket at a lower rate. Snack bar services are available at Worcester Commons and Hampden Dining Commons during regular hours of operation.

Expenses

Amherst Campus

Expenses are approximately \$2300.00 per year for the normally economical student. First-year costs are usually greater than those of the other three years, and there are fewer opportunities for earnings. Therefore, a student is advised to have a definite plan for meeting the expenses of the first year before entering. The following estimate of a year's expenses, based chiefly upon last year's costs, includes only those items which are strictly University-related and does not include amounts for clothing, laundry, travel, etc. These costs vary slightly from year to year. Tuition for residents of Massachusetts is \$345 per year; for others, \$1550.00. The University reserves the right to change any fees without advance notice.

ESTIMATED ANNUAL EXPENSES — AMHERST

|                                                                     |            |
|---------------------------------------------------------------------|------------|
| Tuition (Residents of Massachusetts)                                | \$345.00   |
| Room Rent in University Residence Halls (Approx)                    | 705.00     |
| Telephone (Where Available)                                         | 47.00      |
| Board at University Dining Halls (Five-Day Plan — Approx)           | 736.00     |
| Athletic Fee                                                        | 30.00      |
| Physical Education Fee                                              | 20.00      |
| Campus Center Fee                                                   | 64.00      |
| Fine Arts Fee                                                       | 6.00       |
| Student Activities Tax (Approx)                                     | 58.00      |
| Student Health Service Fee                                          | 92.00      |
| Student Medical/Surgical Insurance (12 Months' Coverage — Optional) | 53.00      |
| Books, Stationery, Laboratory and Other Supplies (Approx)           | 200.00     |
|                                                                     | \$2,356.00 |

INITIAL PAYMENT FOR FRESHMEN — AMHERST

|                                                           |           |
|-----------------------------------------------------------|-----------|
| Tuition (Residents of Massachusetts)                      | \$ 161.00 |
| Room Rent in University Residence Halls (Approx)          | 352.50    |
| Telephone (Where Available)                               | 23.50     |
| Board at University Dining Halls (Five-Day Plan — Approx) | 368.00    |
| Athletic Fee                                              | 15.00     |
| Physical Education Fee                                    | 10.00     |
| Campus Center Fee                                         | 32.00     |
| Fine Arts Fee                                             | 3.00      |

EXPENSES

|                                                                     |            |
|---------------------------------------------------------------------|------------|
| Student Activities Tax (Approx)                                     | 29.00      |
| Student Health Service Fee                                          | 46.00      |
| Student Medical/Surgical Insurance (12 Months' Coverage — Optional) | 53.00      |
| Books, Stationery, Laboratory and Other Supplies (Approx)           | 100.00     |
|                                                                     | \$1,193.00 |

Explanation of Fees and Payments

IN-STATE TUITION

As a state institution, the University offers the privilege of in-state tuition to all students entering from the Commonwealth. Eligibility for admission under the low residential rate is determined in accordance with the policy established by the Trustees and detailed under "Residence Status."

ATHLETIC FEE

Funds received from this charge are used to support comprehensive men's and women's intercollegiate programs as well as intramural programs.

PHYSICAL EDUCATION FEE

Income from this fee is used to support the required physical education program, intramural athletics, and general recreation.

CAMPUS CENTER FEE

Funds received from this charge are used to support the Student Union and the Campus Center and meet the operating costs of their various activities.

FINE ARTS FEE

Funds received from this fee are used to support a varied and comprehensive program of fine arts events for the cultural enrichment and enjoyment of the undergraduate body.

STUDENT ACTIVITIES TAX

This tax supports student government and an extensive and varied range of cultural and social activities for students. In addition, payment entitles each student to admission to many campus events and includes a subscription to the daily student newspaper, the annual yearbook, the student handbook, and a student guide to the campus.

HEALTH SERVICES FEE

Funds received from this charge are used to support the medical, psychiatric, and health services provided by the staff of the Health Center.

MEDICAL/SURGICAL INSURANCE

This is an optional plan intended to supplement the care received by students at the Health Center. It provides hospital, medical and surgical care on a 12-month basis for injuries or illness during the school year, holidays, summer vacation, and other times when the student is off campus. Students who register for the fall semester have only one opportunity to enter or reject this program each year, at the time of payment of the fall semester bill. It is also offered on the spring semester bill for new spring registrants only. Married students desiring family coverage under the plan now in existence at the University are advised to contact the Student Health Services. All candidates for and members of intercollegiate athletic teams are required by the Athletic Department to subscribe to the supplementary insurance plan.

COMMENCEMENT FEE

A commencement fee of \$10 is assessed students in September of their senior year, as commencement exercises and events are intended to be self-supporting.

SPECIAL UNDERGRADUATE STUDENTS

The Special Student tuition rate is \$15.00 per credit for Massachusetts residents, up to a maximum of \$150.00, and \$77.50 per credit for nonresidents, up to a maximum of \$775.00. Every student must pay a \$1 identification card fee yearly, and a student taking three or more courses a semester must pay a Campus Center fee and a health fee.

CREDIT BY SPECIAL EXAMINATION

Any student receiving credit by special examination must pay \$5 per credit before the examination may be taken. This fee is nonrefundable.

SCHOLARSHIP PAYMENT

Known scholarships are shown on the fee bills. If such items are not shown, deductions may not be made from the bill until satisfactory evidence has been presented to the Bursar's Office by the recipient.

Payment Due Date

In accordance with University policy, all charges for tuition, fees, board and room rent in University Residence Halls are due and payable prior to the date of registration of each semester. Bills will be rendered in advance with due date shown and payment may best be made



## Student Personnel Services

by mail. No student may register until all University charges are paid.

### Late Payment and Registration

Any student who does not make payment of his or her semester charges by the date specified may be required to pay a late payment fee of \$5.

### Refunds

#### TUITION AND FEE REFUNDS

A student who leaves the University for any reason, except as specified below, before a semester is completed will be granted a pro rata refund of tuition and fees. A student who makes an advance payment and then for any reason does not attend any part of the next semester or term at the University will be given a full refund of tuition and fees. The \$15 matriculation payment required of new students is not refundable.

Refunds are first applied to reimburse scholarship or loan funds (up to the full amount), and any remaining amount is refunded to the student or parent. A student who is suspended or expelled from the University for disciplinary reasons forfeits all rights to a refund.

#### *Refund Schedule*

##### *Regular Term*

- a. Within the first two weeks from the beginning of semester or term (Registration Day) — 80%.
- b. During the third week — 60%.
- c. During the fourth week — 40%.
- d. During the fifth week — 20%.
- e. After the fifth week — no refund.

##### *Summer Session*

- a. During the first week — 60%.
- b. During the second week — 20%.
- c. After the second week — no refund.

#### ROOM RENT AND BOARD REFUNDS

A student who has made an advance payment of room rent will be granted a full refund of prepaid room rent if he or she fails to attend any part of the next semester or term or does not reside in a residence hall or other housing. Prepaid board will be refunded on a special per diem basis.

A new policy of Room Rent Refunds was placed in effect by the Board of Trustees in Spring Semester 1973. According to the policy, "student room rent refunds shall be refundable according to the following instructions: Any student who occupies his/her assigned accommodations and subsequently

leaves the University prior to the end of the first full class week shall automatically be charged a minimum of \$100 for his/her room. Any student who leaves the University during the second through fifth weeks shall be charged \$100 plus 20% of the remaining balance for each week or part thereof. No refunds will be made after the fifth week of the academic semester. Refunds will be made during the refund period only to students who officially withdraw from the University through the Registrar's Office and according to the Registrar's official withdrawal date. The Dean of Students' Office will be authorized to make exception to the above only for reasons of involuntary entry into military service or for reasons of 'extreme emergency'. Any exception made, however, shall not apply to the \$100 minimum charge which shall be levied in all cases automatically."

Student Personnel Services comprise a number of agencies with primary concern for students' non-academic (out-of-the-classroom) activities — residence halls, health, counseling, student activities, security, admissions, records, career planning, financial aid, and related services.

The Vice Chancellor for Student Affairs is responsible for the overall direction for departments providing services which, in addition to the above, provide support services for the entire campus community.

Student Personnel Services not described elsewhere in this Bulletin include the following:

The *Housing Office* has responsibility for the supervision of residence hall room assignments and room changes and serves as a central source of information for off-campus housing listings.

The *International Programs Office* assists and coordinates international programs, including the study abroad programs of the University of Massachusetts. Students can obtain information from the Office of International Programs on a range of overseas study programs, including those operated by other American colleges and universities and by foreign institutions. The office also has information on low-cost international travel, international student identity cards, financial aid for study abroad and work opportunities overseas. Students planning to go abroad for work study, or travel should consult the Director in making these plans. The Director also coordinates Marshall and Rhodes Scholarships.

The *Foreign Student Office* offers assistance to foreign students, faculty and staff and should be consulted in regard to all matters pertaining to their official immigration status while in the United States. In addition, the Foreign Student adviser may be consulted regarding any other problems which a person from another country may encounter while at the University. These questions may include help in finding housing, help with financial matters including the authorization of foreign student loans, relations with American students and the community, and personal problems. The adviser further attempts to help in coordinating community service projects, such as speaking engagements, trips to the United Nations host families, and International Clu



activities. The Foreign Student Office is part of the International Programs Office.

The *Admissions and Financial Aid Office* is responsible for all administrative procedures with respect to undergraduate admissions to the University, including liaison with high school guidance counselors, Community College staff personnel, and other admissions officers for transfer students; it also passes on re-admission of returning and re-entering students and admissions standards set in coordination with the Vice Chancellor for Academic Affairs and academic departments.

The *Registrar's Office* is responsible for registration (enrollment) and matriculation of undergraduate students at the University; administrative procedures relating to course loads, courses of study, withdrawals, grade reports, and transcripts; and maintaining the permanent academic record cards.

The *Office of Transfer Affairs* is a resource center for all matters pertaining to the transition process of students entering the University from other institutions of higher education. (Nearly one-fourth of all newly entering students are transfers. The major portion of transfer students come from the state-supported Community Colleges.) This office also coordinates with the Community College system the mechanisms for admission, credit evaluation, financial aid, and orientation, and is concerned with the adjustment process for transfers. It works with the other Student Personnel Services at both the Community College and the University in an attempt to assist the transfer in making a smooth and comfortable adjustment to the University.

The *Student Development Center* provides personal, social, educational and career counseling services to present and past students. In an attempt to contribute to the improvement of the students' living and educational environments, the Center shares the responsibility for facilitating the students' development with residence hall staffs, instructors, and personnel in other divisions of the University.

In the past, students have utilized the Center's resources by discussing developmental concerns, personal difficulties, and decision-making career and educational matters. Others have come to consult on research design, test and ques-

tionnaire construction, human consciousness, humanistic psychology, and interpersonal communication. All are assured of confidentiality on personal matters discussed with Center staff.

The *career planning services* of the Student Development Center include vocational counseling and career development services to undergraduates, graduates, and alumni. Informal testing is used occasionally to assist students with remedial problems, to aid in the identification and development of personal and vocational goals and objectives, and to begin establishing a career. The office advises students on employment opportunities and arranges for employers, representatives from business, industry, government, schools, and other areas to visit the campus during the year to interview prospective graduates. The recruiting schedule as well as pertinent planning information appears weekly in the Center's *Career News*. A resource library in the Center provides occupational information, industrial literature, graduate school information, and self help career aids. A librarian is available to help students locate and use resource materials.

A *credentialing service* provides a place for each student to establish and maintain an up-to-date file of personal records, (including registration information), a developmental resume, letters of recommendation, and other supportive documentation. Copies are sent to prospective employers upon their request (no charge) or when initiated by the candidate (a nominal charge).

The Center is an important source of information and consultation on teacher certification requirements for students planning to teach in public schools. When in doubt, it is critical that students talk with the Center's Educational Placement Specialist. This should be done prior to the senior year to make certain that certification requirements will be met upon graduation. The Educational Placement Unit is an expert resource of information on local certification, specialized certification, and certification in states other than Massachusetts. Additional information concerning documents required, vacancies, local and regional teaching market trends and other information is also available upon request.

The *Department of Public Safety*

comprises the University Police, the Security Guard Force, and the University of Massachusetts Police Training Institute. It works closely with the Town of Amherst Police Department, the Massachusetts State Police, and other state law enforcement and public service agencies to provide high quality law enforcement, regulatory training, and public interest services for the Amherst campus of the University. It cooperates also with federal law enforcement agencies, upon specific request, to assist in the enforcement of relevant federal laws.

The Campus Security Force is responsible for the security of University property, provides protection of life and liberty, parking control, emergency transportation of sick and injured, and guard services when enforcement of certain regulations is established by the Board of Trustees. The guards are assigned to parking control duties during the day and patrol of residence hall areas at night. In accordance with provisions of the Code of Student Conduct, student ID cards or other means of identification must be shown upon request to any properly identified member of the security department, to enable the officer to perform his/her assigned duties.

University police officers are responsible for the public safety of all persons and property within the physical boundaries of the University campus.

The policies of the department, enforcement procedures and regulations are governed by federal, state and local laws and Trustee regulations. In addition, department personnel are guided by a code of ethics adopted by the International Association of College and University Security Directors.

## Health Services

The University Health Services is organized to provide a high quality comprehensive health program for the University community. Each student pays a health fee which provides a wide range of prepaid services in campus facilities. In addition, a number of other services are available on a co-payment basis.

Physicians, nurse practitioners, and other health professionals work as a team to provide medical care to students at the Health Center. Complete facilities located at the Center include x-ray, laboratory, pharmacy, and physical therapy facilities, as well as an inpatient service for those in need of hospitalization. Specialty services such as allergy and eye care clinics are also provided, as are consultation in orthopedic surgery, and obstetrics and gynecology.

All students submit health data upon entrance to the University. Any student who is under medical supervision prior to entrance is urged to have his/her physician write to the Health Services, giving reports and instructions in appropriate detail. In brief, the Health Services attempts to provide each student with a coordinated and comprehensive program of health supervision formerly provided by the family physician.

The Dental Health Division provides emergency dental care, routine oral examinations, and dental education as part of the health fee. Some services, such as cleaning and restorative care, are provided on a modified fee-for-service basis as time permits.

Recognition of the specific emotional needs of students in an educational environment is recognized by the provision

of an active mental health program. The Mental Health Division provides personal and couples counseling, individual and group therapy, and community consultation.

All visits to the Health Services are treated as confidential. No information is released without the written permission of the student.

The Health Education Division offers a variety of programs aimed at the development of attitudes and behavioral patterns which promote healthful personal and community living. Programs include workshops, discussion groups, peer training programs and consumer activities in such areas as sexuality, nutrition, alcohol and first aid.

The Environmental Health and Safety staff operates to ensure a safe and healthful environment for all who live or work on campus. Sanitation, radiation, fire protection and building and traffic safety are major areas of activity.

The Student Advisory Board works with the Health Services staff in reviewing policy, evaluating services and initiating and developing new programs. Students are urged to participate in the activities of the Board.

A supplementary insurance plan has been developed to provide for that hospital and surgical care not available at the Health Center. This optional program can be elected in September only. The insurance provides coverage for twelve months. All candidates for and members of intercollegiate athletic teams are required to subscribe to this supplementary insurance plan.

## Student Activities

### Campus Center Complex

The Campus Center Complex is composed of the Murray D. Lincoln Campus Center, the Student Union Building, and the Parking Garage. It houses the offices of the Campus Center Director and his staff, the Student Activities staff, the University Ombudsman, the student government staffs, and RSO groups.

Service departments of the complex include the University Store, the Campus Assistance Center, cashier's office, U.S. Post Office, barber shop, games area, music library and listening lounge, sweet shop, print shop, media services, Campus Travel Center, and overnight accommodations with parking facilities and food services (four cafeterias and the Top of the Campus restaurant and cocktail lounge). Meeting rooms, lounges, reading rooms, and art galleries are available for student and general campus use.

The Campus Center Governing Board, comprised of undergraduate and graduate students, determines policy for the operation of the Center. The Program Council, a standing committee of the Board composed wholly of students selects, plans, and executes all Center activities in art, music, dance, movies special events, etc. Any student may apply for membership.

Construction and operating costs are met from student fees and income generated from general operation, particularly of the Food Service Department, the University Store, and Overnight Accommodations. In effect, a portion of every dollar generated within the Complex is recycled back into the Center to benefit the student body; that is, through building services, Program Council activities and the assistance of the professional staff. Full use of income for these and other positive purposes is, of course, a major factor in maintaining student fee at a reasonable rate.

The Campus Center hosts program sponsored by the Division of Continuing Education, the alumni of the University and many service organizations. The Complex is also used heavily for conferences, institutes, workshops, and short courses.

### Student Activities Office

In addition to serving as the headquarters for Recognized Student Organizations (RSO), the Student Activities Office in the Student Union provides program resource materials, counseling





on program planning, advice on program selection and procurement, and assistance on budgeting, purchasing, procurement of campus support services, contracts, and other business procedures.

The RSO staff provides to student groups a computerized banking and bookkeeping service and offers advice on financial and business concerns such as bidding, insurance, budgeting and accounting. The staff also includes a Crafts Adviser who operates, manages, and advises students in the Student Union Craft Center. Most members of the Student Activities staff are Notaries Public for the convenience of students, particularly for absentee balloting.

Participation in extracurricular activities offers opportunities to further broaden objectives of a University experience. The knowledge, skill, and judgment developed in the classroom can be tested and refined through use in many organizational settings. The University expects that no student will be excluded from membership in any club, society, fraternity, sorority, or other organization for reasons of race, creed, color, sex, or national origin except those instances wherein groups are specifically exempted by federal law. Campus groups belonging to national bodies which openly or covertly endorse such discrimination are in violation of University principles. Alleged violations are to be reported to the Dean of Students. There are over 500 student organizations ranging in interest from political, religious and cultural, to social, professional, and recreational. Some of these include:

#### **Media**

**VMUA** - The campus radio station (91.1 FM), owned and operated by students for the University community.

**Black Moss Communications** - Black students' media group designed to bring Black news, current events and culture to the community.

**The Daily Collegian** - One of the largest student newspapers in the country.

**Spectrum** - A Black literary magazine, published two or more times per year. It features art, fiction, essays and commentaries.

**INDEX** - The University undergraduate yearbook; one of the oldest and largest yearbooks in the nation.

**Spectrum** - Published about two times a year, *Spectrum* features poetry, fiction, drama, art, photography, political and social commentary, music and book reviews and essays.

**Shorthorn** - The Stockbridge College student newspaper, *Shorthorn* is published weekly or bi-weekly.

**STOSAG** - STOSAG is the Stockbridge College yearbook published annually by a student staff.

#### **Professional and Special Interest Clubs**

Approximately fifty professional clubs established in connection with the various major courses of study, stimulate students' professional interest in their chosen fields and afford opportunity for discussion of technical subjects of mutual interest.

Special interest groups cover an even wider range of interests, in many cases offering learning experiences in subjects not included in the academic areas of the University (e.g., religion, politics, sports, hobbies, etc.). A partial list includes: Young Socialists Alliance, Amateur Radio Club, Volunteer Fire Department, Equestrian Club, Crew Club, Bike Club, Square Dance Club, Strategy Games Club, and numerous musical, film, theatre, religious, political, ethnic, cultural, and sports (including Oriental sports) organizations.

#### **Social Action Groups**

**Belchertown Volunteers** - Belchertown Volunteers work with the mentally retarded at the Belchertown State School. Volunteers sponsor numerous activities, and students often take people from the institution to campus for the day for various activities.

**Northern Educational Services** - NES volunteers tutor English-speaking inner-city children in the primary grades, mostly in reading and math. There are several programs, including a recreational one with arts and crafts, cooking, sewing, dancing, etc. and a night tutorial program for juniors and seniors in high school.

**Poverty Committee** - The committee deals with the problems of welfare, united mine and farm workers support, National Alliance Against Racism and Oppression, etc. The group sponsors educational programs with films, speakers, letter petitions, and polling.

**The Boltwood Project** - Funded by the Student Senate, its members work with the mentally retarded at Belchertown State School.

**Room To Move** - Drug counseling drop-in center, cooperating with the Health Services.

**Coalition for Environmental Quality (CEQ)** - Works toward mobilizing constructive and informed activism on environmental matters.

**Massachusetts Public Interest Research Group (MassPIRG)** - The Massachusetts Public Interest Research Group (MassPIRG) is modeled after the Ralph Nader organization in Washington, and funded by college students in Massachusetts.

**The University and State Communications Council** - The University and State Communications Council is an undergraduate student group which works extensively with the University administration, the State Legislature, and the media in an effort to open and develop channels of communication between students and the people involved in these three areas.

In addition to these groups there are other special interest professional, political, religious, social action, educational, cultural, governmental, recreational, and media groups, plus honor societies, residence hall groups, fraternities, and sororities.

#### **Non-Traditional Student Assembly and CAOS**

The Non-Traditional Student Assembly is a fairly new RSO group formed in response to the recent influx of older undergraduate students. The aim of the Assembly represents the concerns of its membership to the Student Government Association and to various academic and administrative offices on campus.

An older student is any person who has not come to college directly from high school. Membership in the NTSA is automatically extended for older students whether they are matriculated in the University degree program or taking courses through Continuing Education. Graduate students are also welcome and encouraged to participate in the NTSAs activities.

**CAOS (Counselling Assistance for Older Students)** is an outreach program of the NTSA. CAOS provides counselors for academic and personal problems



ranging from pre-registration course selection to financial aid, house hunting and psychological counseling. A staff of trained volunteers and paid assistants is available Monday-Friday from 9-4 in the CAOS office, 308 Student Union.

Other programs of the NTSA-CAOS include running workshops, classes in personal counseling and social activities geared to the interests of older students.

Non-traditional students are encouraged to become involved in both the NTSA and CAOS. Academic credit and work-study funds are available for CAOS counsellors.

### **Programming Organizations**

*Distinguished Visitors Program (DVP)*-Organization supported by student tax funds to bring to campus nationally and internationally known persons to speak on domestic and international affairs, the sciences, the humanities, and the arts.

*Campus Center Program Council* - Responsible for major programming in the Campus Center/Student Union Complex, including concerts, lectures, films, art exhibits and acquisitions, recreational activities, crafts, etc.

### **Student Honor Societies**

*Adelphia* - Men's non-academic honor and service society (senior and junior classes).

*Mortar Board* - National honor society for senior women

*Scrolls-Moroon Key* - Sophomore honorary-service society.

*Revelers* - Group of upperclassmen who promote and encourage interest in campus activities.

*Alpha Phi Omega* - National service fraternity.

*Gamma Sigma Sigma* - National service sorority.

*Delta Sigma Rho* - *Tau Kappa Alpha* -National honorary forensic fraternity.

### **Academic Honor Societies**

*Phi Beta Kappa* (arts, humanities, and sciences)

*Phi Kappa Phi* (all fields of study)

*Sigma Xi* (pure and applied science)

*Sigma Goma Epsilon* (earth sciences)

*Omicron Nu* (home economics)

*Phi Tau Sigma* (food science)

*Phi Eta Sigma* (freshman men, all fields of study)

*Tau Beta Phi* (engineering)

*Beta Gamma Sigma* (commerce and business administration)

*Alpha Lambda Delta* (freshman women, all fields of study)

*Eta Kappa Nu* (electrical engineering)

*Alpha Zeta* (agriculture)

*Xi Sigma Pi* (forestry)

*Alpha Pi Mu* (industrial engineering)

*Kappa Delta Pi* (education)

*Phi Sigma Alpha* (political science)

### **Student Government**

The Student Government Association (SGA) works for fundamental academic and social reform on campus while providing services to students, including a lecture-note program, book loans, bus service, course description guide, attorney for students, and funding for wide variety of student groups and services. The SGA is working toward full student self-determination in social and academic life.

All undergraduates are members of the SGA and are eligible to join its activities. The Student Senate is the legislative arm of the SGA. The seven area governments determine policies in their respective areas. The SGA President coordinates the activities of the SGA and represents the student body to the administration and faculty.

The student role in running the University has increased greatly in recent years. Students interested in University reform should contact the SGA President.

### **Fraternities and Sororities**

Men's social fraternities include Alpha Tau Gamma (Stockbridge School), Beta Kappa Phi, Delta Chi, Kappa Sigma, Lambda Chi Alpha, Phi Mu Delta, Alpha Epsilon Pi, Phi Delta Theta, Q.T.V., Zeta Psi, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Phi Epsilon, Tau Epsilon Phi, Theta Chi, and Zeta Nu. Women's social fraternities include Alpha Chi Omega, Chi Omega, Iota Gamma Upsilon, Kappa Alpha Theta, Kappa Kappa Gamma, Lambda Delta Phi, Sigma Delta Tau, Sigma Kappa, and Sigma Sigma Sigma. There is one co-ed fraternity, Sigma Alpha Mu

A Greek Council consisting of the presidents and one representative of these fraternities is the area government for this residential area. The Greek Council provides service to all its member organizations, the University, and the community, as well as dealing with general matters pertaining to fraternity life. Each of the fraternities owns its own house, and the members are responsible for the daily maintenance, financial management, meal planning, governing, and organizing of special events or programs.

### **Music Organizations**

Campus music organizations provide experience in musical and allied activities for performers and technicians with various kinds of interest and ability.

The University Symphony Orchestra, the bands, and the choral organizations are in the Department of Music. Membership is open to all students, faculty, alumni, and others in the community.

### **University Theater**

The University Theater offers public performances of plays during the regular academic year winter season. Productions grow out of study projects as part of Department of Theater's curriculum, and are primarily the work of graduate and undergraduate theater majors. However the Department welcomes non-majors students from the Five Colleges, and persons from the University community at large, all of whom are eligible to participate in many aspects of these productions. Try-outs for all productions are announced publicly by the Department whose facilities in the new Fine Art Center include a studio theater, a main stage proscenium theater, and fully equipped shop and rehearsal areas.

### **Debate**

The University Debate Union is an academic and co-curricular activity of the Department of Communication Studies. Each year, debate teams research and debate an intercollegiate proposition dealing with an important national or international problem. The debaters attend tournaments at colleges and universities throughout the United States.

### **Arts Council**

The University of Massachusetts Art Council is composed of six undergraduate and three graduate students, six faculty members and one non-faculty student member. Student and faculty members

are appointed by their respective Senates. The staff member is appointed by the Council.

The Arts Council, together with its professional staff, develops and administers a varied series of professional entertainment for the University community including Dance, Theater, Chamber Music, Opera, Ballet, etc. The Arts Council endeavors to bring to the University some of the world's finest performing organizations and artists.

The University of Massachusetts Arts Council also supports the University Art Gallery. The Gallery is open year round and provides exhibitions of traveling shows.

A schedule of Arts Council events may be obtained by contacting the Council office.

### Athletics

The University recognizes the educational advantages of a well-organized intercollegiate and intramural sports program. In intercollegiate athletics for men, the University is represented by teams in football, soccer, cross country, basketball, swimming, wrestling, indoor and outdoor track, hockey, golf, tennis, baseball, lacrosse, gymnastics, skiing, and crew. The women are represented in nine intercollegiate sports: basketball, field hockey, gymnastics, skiing, softball, swimming, tennis, volleyball, and crew.

The University also sponsors a broad program of intramural activities in which both men and women students are encouraged to participate. Team sports available each year include touch football, powder puff football, basketball, bowling, volleyball, soccer, badminton, softball, horseshoes, handball, bicycle racing, and tug-o-war. Individual activities include cross country, squash, paddleball, wrestling, wrist-wrestling, swimming, table tennis, weight lifting, and tennis.

The University holds membership in the: Yankee Conference, National Collegiate Athletic Association, Eastern College Athletic Conference, New England College Athletic Conference, Association of Intercollegiate Athletics for Women, Eastern Association of Intercollegiate Athletics for Women, and Massachusetts Association of Intercollegiate Athletics for Women.

### Alumni Association

The Associate Alumni is the general alumni organization of the University,

with headquarters at Memorial Hall, erected by alumni and friends in honor of those men of the University who died in World War I. The *Alumnus* magazine is published by the University seven times a year. According to its bylaws, the association is constituted for the purpose of promoting the general usefulness of the University; of activating mutual regard among its graduates and former students; and of strengthening their attachment to their Alma Mater. Under sponsorship of the University of Massachusetts Building Authority, composed of alumni who volunteered their services, 19 residence halls, two faculty apartment centers, and a Student Union building have been constructed on the campus. Alumni also serve the University by their support of innovative academic programs through their contributions to the rapidly growing annual alumni fund and through special bequests. The governing body of the Associate Alumni consists of its officers and a board of directors. Eight directors are elected each year and serve three-year terms.

### Religious Activities

The University gives support to the religious life of its students by affording the use of University facilities for student-groups of all faiths. It cooperates with the official agencies of the three faiths most largely represented at the University by recognizing the contributions of their privately supported chaplains and by giving them facilities and privileges for their work.

On campus, the religious life of Catholic students is enriched by activities and daily and Sunday services at the Newman Center. Jewish students participate in services and activities sponsored by the B'Nai B'rith Hillel Foundation. Protestant students are served by the United Christian Foundation, an ecumenical ministry providing counseling services as well as opportunity for involvement in service and social action.

Other religious groups such as the Baha'i Club, the Christian Science Organization, the Inter-Varsity Christian Fellowship, the Lutheran Club, and the Orthodox Club also meet regularly on campus and students interested in their programs are welcome to attend. The Campus Religious Council provides a cooperative inter-relationship among the campus religious groups and serves the whole University community by spon-

soring book and clothing drives, the *Religious Handbook for Freshmen*, and ecumenical discussion and action.

The local Protestant and Catholic churches of Amherst provide opportunities for Sunday worship, and Sabbath services for Jewish students are held on Friday evenings. Several denominations sponsor active student programs centered in the local churches, and students are welcome to attend events and join groups sponsored by the denominations.

### Motor Vehicles

All student, faculty, and staff motor vehicles must be registered with the Parking Office, Room 1, Munson Hall.

Any student may be permitted to have a motor vehicle on campus provided it is registered with the Parking Office and complies with published University regulations. Copies of the University regulations concerning motor vehicles should be obtained at the Parking Office, Room 1, Munson Hall.

Visitors during regular business hours are requested to use the multi-level Campus Parking Garage or parking meters. A University bus service, free of charge, covers the campus and environs.

All parking areas are under roving security surveillance. Visitors may secure information at the Parking Control Booths or at the Security Building. Inquiries concerning parking should be directed to the Parking Coordinator, University of Massachusetts, Amherst, MA 01002.



# Financial Aid

## General Information

Financial aid consists of scholarships and grants (the awarding of money for which no repayment is expected), self-help in the form of loans (money lent to the student to be repaid after the termination of studies), and employment (guaranteed jobs to provide a certain income during the year). Financial aid is offered to those students who cannot, through their own and their parents' reasonable efforts, meet the full cost of a college education.

Financial aid programs are funded from a number of sources: State and Federal appropriations, private philanthropy, University Alumni and others. The amount of money available, academic requirements, and other eligibility criteria vary from program to program. Each student applicant is automatically considered for every University-administered program for which he/she may be eligible. Students desiring further description of specific programs may obtain information sheets from the Financial Aid Office, Room 243, Whitmore Administration Building.

## Application Procedures

An application for financial assistance consists of two forms: A University Aid Application and the Parents' Confidential Statement. (Student Financial Statement for students who meet the legal criteria for financial independence.) Both forms must be submitted before an application will be processed.

## INSTRUCTIONS FOR HIGH SCHOOL SENIORS

All high school seniors applying for financial assistance must file the Parents' Confidential Statement. The deadline for priority aid consideration is March 1 of their senior year. Applications received after that date are considered late and will be processed only if funds remain.

**Special Notice:** The Basic Educational Opportunity Grant Program (BEOG) is a new Federal grant program. Maximum awards under this program could be as high as \$1400 per year. The BEOG program is an entitlement program under which all eligible applicants who demonstrate financial need according to the Federal guidelines will receive Basic Grants. Applications should be available after February 1 through your high school. (If not available through your high school, contact this office.)

*Applicants for Financial Assistance from the University of Massachusetts-Amherst MUST Apply for a Basic Grant.*

## INSTRUCTIONS FOR ALL OTHER APPLICANTS

The priority deadline for financial assistance for all other students is April 30 preceding the academic year for which aid is requested. Students who feel that they are financially independent of their parents should contact the Financial Aid Office to see if they are eligible to file a Student's Financial Statement.

## Disbursing of Awards

All financial assistance except employment earnings are paid in installments at the beginning of each semester in the form of a credit on the recipient's bill. If the aid exceeds the bill, as it often does for students living off-campus, the remainder of the assistance is normally available to the student within two weeks after registration. If the aided student withdraws from the University, any refund of University fees or charges must first be applied to the aid fund to reimburse the fund for the full amount of the assistance received by the student for the semester.

## Types of Aid

### SCHOLARSHIPS AND GRANTS

The office of Financial Aid administers more than 20 scholarship and grant programs with differing eligibility criteria. Residency, academic average, field of study and parental income may determine eligibility for specific programs. Scholarships normally range from \$200 to \$2000.

## LOANS

### National Direct Student Loan Program

A student may borrow up to \$2500 per year under this program. Interest at 3 percent begins nine months after completion of the program; the loan is to be repaid within ten years. Because of the amount available, this program is necessarily limited and selective.

### Higher Education Loan Plan

The student may obtain a loan of up to \$2500 per year from the bank of his or her choice through the Higher Education Loan Plan. Application procedures eligibility criteria and other relevant information are available at the Financial Aid Office.

## EMPLOYMENT

Under the College Work-Study Program,

a student who meets established financial aid criteria can be assigned to a part-time job on campus or to a job with a non-profit agency in his community during the summer months.

## Benefits for Veterans and Their Dependents

Veterans or their dependents (wife or child of a deceased or 100% disabled veteran) eligible for educational benefits under the Veterans Bill, P.L. 358, the Disabled Veterans Bill 894, or the War Orphan Bill 634, should contact the Veterans Affairs Office at the University 30 days before their classes begin for regular enrollment or up to 120 days before classes for Advancement Payment of their checks. It is important that the eligible student contact the Veterans Affairs Office prior to the beginning of school so that he/she may expect the first check when classes actually begin. It takes approximately four to six weeks for payment after the veteran student has filed the proper V.A. paperwork with the Veterans Office at the University.

Veterans whose home of record was Massachusetts when they entered the Service may be eligible to apply for a state tuition waiver.

## Military Service

The Veterans Affairs Office provides information on draft status and assistance in verifying the status of any male student at the University. Through this office, students may register for the draft within 30 days before or after their 18th birthday; it is unnecessary for them to return to their Local Board to register.



# General Services

## University Library System

The University Library System is composed of the main University Library, a 28-story building which opened in the summer of 1973, and several branch libraries, of which the two principal ones are the Morrill Biological Sciences Library and the Physical Sciences Library. Present holdings include over 1.2-million books, periodical volumes and government documents, and over 258,000 microforms. The more than 10,000 periodicals currently received are housed in the main library or the branch libraries, according to subject matter. Holdings of serials and periodicals and their locations are listed in both the card catalog and the *Pioneer Valley Union List of Journal and Serial Holdings*, a computer-produced book which also includes the holdings of Amherst, Smith and Mount Holyoke Colleges, the Forbes Library, and the Hampshire Inter-Library Center. Additional information about the University Library System and Five College library cooperation is available at the Information and Reference Desks in the main library and also in the branch libraries.

## HAMPSHIRE INTER-LIBRARY CENTER

The University Library is a participating member of the Hampshire Inter-Library Center, a cooperative facility for the acquisition, storage, and servicing of research materials, especially journals, documents, and scholarly sets. Incorporated in 1951 to augment library resources in the area, HILC is jointly operated by the libraries of the four Pioneer Valley colleges: Amherst, Mount Holyoke, Hampshire and Smith, the Forbes Library of Northampton, Massachusetts, and the University Library. The collection numbers about 34,000 bound volumes, and approximately 850 journals are currently received.

## The University Press

The University of Massachusetts Press was established in 1964 as the book publishing division of the University. It is a member of the Association of American University Presses, which includes most of the university-sponsored presses in the United States, as well as affiliates abroad.

The Press publishes scholarly and artistic works which make substantial contributions to the community of learning. Manuscripts and projects are eval-

uated by the Press Committee on the basis of reports submitted by specialists in the field. Once approved for publication, works are edited, designed, produced and marketed by the Press staff. Printing, warehousing, shipping and data processing services are purchased. University students are offered the opportunity of working at the Press, as Interns, Research Assistants, Work-Study employees, to acquire academic credit and on-the-job experience in book publishing.

Since its founding approximately half the books published by the Press have involved the research of this University's faculty. The publications have won numerous awards for design and production, and achieved an outstanding reputation for excellent reviews.

## Scholarly Journals

The *Massachusetts Review* is a national and international quarterly of the arts, literature, and public affairs, published independently with the support and cooperation of Amherst, Hampshire, Mount Holyoke, and Smith Colleges, the University of Massachusetts and its Alumni Association, and others.

The English faculty also edits and publishes three scholarly journals. *English Literary Renaissance* on English literature in the age of Shakespeare and Milton (1485-1665); *Early American Literature* on the colonial and Puritan periods (1760-1880); and *RSVP*, a journal on Victorian English periodical publications. Graduate students in that department publish *MSE*, Massachusetts Studies in English. The quarterly *Polity* is published by the department of Political Science.

## Language Laboratories

The James W. Butler Language Laboratories provide special study facilities to students enrolled in foreign language courses. Three of the labs, equipped with student-controlled tape recorders and monitoring facilities, can accommodate up to 90 students in three elementary classes. Another room, with 20 booths, is available to students who make use of the Open Library Usage service for independent study.

A fifth lab was designed and equipped for intermediate and advanced language students. Its 28 booths are furnished with dialing pads which enable its users to listen to any program tape available in the banks of the Random Access Library

(RAL). It is anticipated that in the future these tape-machine banks can be reached over telephone lines.

Lesson tapes and RAL program masters are produced, transcribed, and programmed in the Recording Studio and the Transcription Center. A highly trained technical staff is available at all times.

## Office of Public Affairs

The Office of Public Affairs serves as liaison between the campus community and the general public, and as an internal information center for the benefit of faculty, students, and administration. Its primary function is to provide accurate information about the University's current and projected programs and thus to foster understanding of the institution's mission as a nationally recognized facility of higher education, research, and public service. The office assigns specific responsibilities to six departments — Editorial Services, Graphic Design and Production, News Bureau, Creative Services, Photographic Services and Radio Station WFCR. Through these departments the office supplies information to all communications media as well as to agencies of government, schools and other educational institutions and foundations, professional societies, research organizations, extension agencies, and to individuals who request data of various kinds.

## Office of Budgeting and Institutional Studies

The Office of Budgeting and Institutional Studies is responsible for the coordination of campus fiscal planning, analysis, and information reporting. The responsibility for these activities rests with three separate but interdependent groups within the office.

The Analytical Studies Office coordinates institutional studies and analysis of the cost and benefit implications of the campus operations and programs. This office also conducts research related to campus issues such as program review, resource utilization, enrollments, and program planning.

The Budget Office coordinates the development and management of the campus operating budgets. The office assists in the development and implementation of budgetary guidelines, fiscal policies, and financial plans.

The Management Systems Office provides system design and program-

ming services for the development of improved management information for the various campus administrative units. The office is responsible for establishing and maintaining systems documentation, processing procedures, data element definitions, and files for all administrative applications.

The staff of the Office of Budgeting and Institutional Studies assists members of the campus community in understanding the nature and operations of the campus, and provides services for planning, improving, and implementing campus programs and activities.

#### **Cooperative Extension Service**

The Cooperative Extension Service, affiliated with the College of Food and Natural Resources, was established by federal and state legislation to help people identify and solve their farm, home, rural, and urban community problems. It is a cooperative educational program planned, conducted, and financed jointly by the county governments, the University, and the United States Department of Agriculture.

#### **Massachusetts Agricultural Experiment Station**

The Massachusetts Agricultural Experiment Station, established by state and federal legislation, is associated with the College of Food and Natural Resources. The purpose of the Station is to conduct research bearing directly on the problems of the agricultural industry and the welfare of consumer groups. It is financed by federal appropriations and state offset funds. Research is conducted at the Cranberry Experiment Station in East Wareham, the Suburban Experiment Station at Waltham, the Horticultural Research Center in Belchertown, the College Farm in South Deerfield, and on the Amherst campus. The Environmental Forestry Research Center of the United States Forest Service has been established on the campus in cooperation with the Experiment Station.

#### **Other Facilities and Services**

Audiovisual Center  
Cooperative Fishery Unit  
Cooperative School Service Center  
Cooperative Service Bureau  
Cooperative Wildlife Research Unit  
Institute for Man and Environment  
Institute of Agricultural and Industrial Microbiology  
Labor Relations and Research Center



Massachusetts Population Research Institute  
Northeast Regional Media Center for the Deaf  
Polymer Research Institute  
Program in Urban and Regional Problems  
Technical Resource Service  
University Computing Center  
Water Resources Research Center

#### **Five College Courses**

Amherst, Hampshire, Mount Holyoke, and Smith Colleges and the University of Massachusetts/Amherst combine their academic activities in selected areas for the purpose of extending and enriching their collective educational resources. Certain specialized courses not ordinarily available at the undergraduate level are operated jointly and are open to all. In addition, any qualified student in good standing at any of the institutions may take a course without cost at any of the others, if the course is significantly different from any available to him or her on the home campus. The course must have a bearing on the educational plan arranged between the student and the adviser. Approval by the student's adviser and Academic Dean of the College at the home institution is required. Permission of the instructor is required for students from other campuses.

Students should apply for interchange courses at least six weeks prior to the

beginning of the semester since they may find some courses already filled after that time. Free bus transportation among the five institutions is available for interchange students.

Students interested in such courses will find current catalogs of the other institutions in departmental offices, the University Library, or the Office of the Registrar. Applications may be obtained from the CASIAC Office, E-22 Machmer.

#### **Regional Student Program**

The University participates in a regional cooperative program administered by the New England Board of Higher Education. This program, known as the Regional Student Program, permits qualified residents of the New England states to study with in-state tuition and admission privileges at any of the state universities, the Lowell Technological Institute and the public two-year colleges and technical institutes in a wide variety of study areas.

The purpose of the program is to expand opportunities for higher education for New England residents by making available on an equal basis to all those courses not commonly offered at every institution. This practice tends to reduce duplication of courses and thus to utilize most efficiently the higher educational facilities in each state.

Detailed information about this exceptional program can be obtained from an



## Special Academic Programs

guidance counselor or from the New England Board of Higher Education, 20 Walnut Street, Wellesley, MA 02181.

### Pre-Law Advising Program

The Pre-Law Advising Program was instituted to provide students with information on the nature of legal education, admission to law school, and career opportunities in the legal profession. Law schools do not prescribe any particular method of preparation or program of courses for admission; consequently, there is no Pre-Law major at the University. Interested students are urged to register with the Pre-Law Adviser, E-22 Machmer. Current catalogs from every accredited law school in the United States and other materials pertaining to the legal profession are available in this office.

### Physically Disabled Students

The University is becoming more and more accessible to academically qualified physically disabled students. Although some architectural barriers still remain, most disabled persons can navigate the campus with little difficulty. The campus is large and spread out. However, with proper planning, size should not pose a problem. The University Library, the Student Union, the Campus Center, most classroom buildings, and a few residence halls are wheelchair accessible.

In cooperation with Veteran's Affairs, an office has been established to assist persons with physical disabilities. Early registration, preferential scheduling, orientation programs, housing assistance, a reader's directory for the blind, pre- and post-admission counseling are a few of the services available. Admission to the University is based entirely on the academic qualification of the applicant. Admission procedure remains the same for all applicants, regardless of disability. For further information, contact: Office of Handicapped Student Affairs, 29 D Whitmore Building, tel. (413) 45-0892.

### Bachelor's Degree With Individual Concentration

The Bachelor's Degree with Individual Concentration (BDIC) is a four-semester program in individualized study supervised by an interdisciplinary faculty committee rather than by one of the departments, and leads to either a Bachelor of Science or Bachelor of Arts with Individual Concentration. Work for this degree, usually beginning with the junior year, takes the place of a conventional major and provides students with an opportunity to pursue an area of study not otherwise available at the University. The program must be interdisciplinary, unavailable as such through an existing undergraduate major, and make full use of existing University resources. In developing their concentrations, students may combine courses from departments or schools within the University, from among the Five Colleges, and from limited amounts of independent study and/or internship opportunities.

The course of study is developed by the individual student in conjunction with the full-time University faculty member serving as his/her sponsor, and submitted to the BDIC Supervising Committee for approval.

#### Application to BDIC

Students with at least four semesters remaining at the University should initiate the application process with a BDIC counselor early in the second semester of their Sophomore year, well in advance of pre-registration for the following semester (please consult the *Collegian* for exact deadlines). There are provisions for recent transfers to the University.

NOTE: 1) The degree earned will be either the B.A. or the B.S., depending upon the area in which the greater concentration of advanced work is done.

2) Students seeking a degree from BDIC must still fulfill the usual University core and distribution requirements.

3) We emphasize the importance of planning admission well in advance of application deadlines.

### Colloquia

Colloquia are one-credit courses which seek to augment the academic offerings of departments and schools. They meet for a minimum of 16 hours per semester and require roughly as much work as one third of an average introductory course. They are held in residence areas and are

generally proposed and taught by students with faculty sponsorship and approved by the student/faculty academic policy committees of each residential area. While it is somewhat difficult to categorize the variety of colloquium subjects, they generally respond to student concerns, emphasize community building, and/or experimental activities in art, music and craft areas.

### Continuing Education

The Division of Continuing Education at the University is responsible for helping to meet the educational needs of all part-time undergraduate students: for managing all conferences, institutes, workshops, short courses, and clinics on the Amherst campus and throughout the Commonwealth sponsored by the University; and for designing special educational programs for citizens of the Commonwealth and the region who are not regular full-time students at the University. The Division has its own undergraduate degree program, designed for part-time students who wish to design a curriculum more appropriate to their educational goals than those offered by the traditional undergraduate departments. The Bachelor of General Studies requires 120 hours of credit, up to 75 of which may be transferred from other institutions. Students may be admitted to evening courses or to day courses on a space-available basis after consultation with an adviser in the Division of Continuing Education. Undergraduate part-time students who meet the requirements for any standard University undergraduate degree may have this degree awarded through the Division of Continuing Education in addition.

The Division serves as an educational doorway between the University and potential clients and stands ready to assist anyone in the Commonwealth with an educational problem with which the University might assist. Inquiries may be directed to the Director of the Division, Hills House North.

### Everywoman's Center

The Center serves the Amherst campus and the surrounding community as a headquarters for women's issues and concerns. It operates an extensive academic, personal, and vocational counseling service; maintains a comprehensive library of books, periodicals, and other publications relating to the feminist movement; maintains listing of career



opportunities for women; sponsors Project Self—a series of non-credit workshops which explore what it means to be a woman in today's world; and conducts a number of additional workshops and support groups on a wide range of specific topics related to women's issues.

#### **Global Survival Freshman Year Program**

The Global Survival Freshman Year Program is multi-disciplinary and problem-centered, focusing on five major areas of concern: war, peace and world order; cross-cultural communication and conflict; environmental deterioration and economic development; population; and resources. The faculty is drawn from various departments on campus and works closely with students in courses, field experiences and independent study. Participants take a combination of University and Global Survival courses for a total of 15 credit hours per semester. Features of the program include identification with a small number of freshmen; close relationship with faculty; an opportunity to explore crucial world issues in an integrated format; and an opportunity to pursue independent work in the freshman year.

#### **The University Honors Program**

The Honors Program involves a cooperative effort among the academic departments of the University and the Honors Office that affords highly motivated students of proven ability the opportunity of taking University courses more intensively and in closer contact with professors and other students. It offers an alternative to the core requirement system that allows students more freedom in choosing their course of study. In addition, members of the program have the benefits of individualized counselling and advice, and a file of personal evaluations of the student's work in Honors courses that may be used as recommendations for graduate schools and job interviews.

Any student who has completed one semester's work at the University, including one Honors course, may be eligible for admission to the program. It must be noted, however, that since juniors and seniors are now expected to go through a departmental Honors Program, evidence of their major department's willingness to accept them may be necessary. The student must obtain an

application form from the Honors Office, in E-23 Machmer, must have on file in the Honors Office or obtain, an evaluation by the professor of his or her performance in the Honors course previously taken, and must obtain a copy of his or her transcript from the Records Office in Whitmore (which can be obtained free if the candidate says it is for the Honors Office). When the Honors Office has received these three items, an interview with the candidate will be arranged, and if the student and the interviewer agree that it is in the best interest of the student to join that program, the student will be admitted.

While Commonwealth Scholars are exempted from regular University core requirements, they must satisfy the requirements of their major and must take one Honors course every semester in residence and in the program, and must take a minimum of six Honors courses. Under this requirement, students who are accepted into the program upon completion of the first semester of their freshman year must take seven more Honors courses, one per semester, in addition to the one already taken. Students accepted into the program upon completion of the first semester of their sophomore year or anytime thereafter must take five more Honors courses, at least one per semester, in addition to the one already taken.

A Commonwealth Scholar must also maintain a cumulative average of at least 3.0. If the average drops below 3.0 for two semesters (not necessarily consecutive), or if the student receives an "F" in each of two consecutive semesters, the student may be dropped from the program. Commonwealth Scholars who do not follow the procedural requirements of the program may also be dropped. These requirements include returning a list of courses signed by the preceptor for each term, discussing academic progress or problems with the preceptor at least once a semester, responding promptly to consultation requests from the Director or Associate Directors of the Honors Program, and notifying the Honors Office of current address and telephone number or change in major or preceptor. Any student who fails to meet these standards must withdraw from the program. In addition, the Honors Council has outlined conditions under which students will be considered to be on Academic Probation in the program:

- 1) One or more "F"'s on the student's permanent record
- 2) A semester average of below 3.0
- 3) A record of more than one Incomplete

A student placed on Academic Probation for more than one term may be asked to withdraw from the program if the Director and Associate Directors concur in this decision.

#### **DEPARTMENTAL HONORS**

Starting with the class of 1977, any student who wishes to be eligible to graduate with an Honors designation of *Magna Cum Laude* or *Summa Cum Laude* must pursue a Departmental Honors Program. Since the curricula of Departmental Honors Program vary widely from department to department, any student interested in pursuing Honors in his or her major field should investigate that field's Honors curriculum. Although a student must usually have a cumulative average of 3.2 or higher to be eligible for a Departmental Honors Program, in exceptional cases students with lower averages may be admitted. Any student interested in pursuing Departmental Honors should confer with the Honors Coordinator of his or her major field.

#### **Legal Studies Program**

The Legal Studies Program provides an opportunity for students to pursue introductory and advanced courses about the nature and function of law; it presents field work and research opportunities, conferences, practica, and special courses about law for the University community; and it enables a limited number of students to major in Legal Studies. The major is individually designed around a basic core of study. This is not a "pre-law" preparatory program: it is an interdisciplinary exploration of the phenomena of law, power and authority, as these are manifested in culture and society. The emphasis is on examining the legal mode of thinking, but one of many possible world views.

LEGAL 201 and 202 are the introductory courses of the Legal Studies Program. An important dimension of these courses is the study of legal phenomena outside the formal legal system, dealing for example, with such institutions as family and school.

The Legal Studies Program is allied with a range of faculty and courses in the Five Colleges. A Five College Legal Stud

ies Catalogue lists many of the offerings available. These courses are open to anyone interested in examining the interrelationships of law and society. The Legal Studies Program also offers opportunities for practical field work experience for qualified students. In the past, these projects have included legislative drafting and research, work with the Western Massachusetts Public Interest Research Group, University Year for Action programs, research on pending litigation, work in legal services projects, juvenile court and probation, welfare, and other governmental agencies.

Admission to the major is available to a small number of undergraduates in order to preserve close contact between students and faculty. Admission is through a selection process in which a study plan is negotiated for each student by the student and major advisor according to their mutual interests.

#### **Orchard Hill Residential College**

Orchard Hill Residential College is a unit of four residence halls offering distinctive educational and cultural programs for students seeking an alternative college experience. Orchard Hill offers a substantial number of 3-credit interdisciplinary courses each semester and an increasing percentage of these satisfy University core requirements. In addition to 3-credit courses, the Hill offers a large variety of student initiated colloquia, sponsored by faculty members and supported by the Academic Affairs Office.

The program focusses on articulation of student needs and concerns (life planning, career decisions, and the individual's own program of education). Special seminars and courses reflect major areas of social and personal concern: Citizenship and Social Change; Society and the Arts; Racial Consciousness and the Third World; Science Technology and Society; Women and Society; Society and the Outcast; Education and Community.

For more information, inquire at 103 Eugene Field House, Orchard Hill.

#### **The Center for Outreach Programs**

Outreach functions as a clearinghouse or off-campus community service. Its two chief components include: a) Student Volunteer Services, a student initiated and student administered program, which places students and other interested persons in over 75 community service organizations in western Massa-

chusetts for five to 20 hours a week, usually without pay or academic credit; and b) a student internship program which provides students with the opportunity to earn up to 15 credits while participating in various federal, state and local community service programs for a semester.

#### **Overseas Study**

The Amherst campus offers a wide variety of overseas study and international exchange programs. The International Programs Office may be consulted for all specific information on these and other overseas study opportunities. Information on summer programs is given in the Bulletin of the Summer Session as well.

*Freiburg Program.* In cooperation with the University of Freiburg, Germany, the University of Massachusetts operates its year-long Freiburg Program. The University of Massachusetts has a permanent facility in Freiburg. The University of Massachusetts Freiburg Center, which serves as the headquarters of the Freiburg Program. Students enrolled in the Program are regularly enrolled students of the University of Freiburg, and take courses in a wide range of social science and humanities courses. The Freiburg Program is not restricted to students concentrating in German, but admits students in philosophy, music, English, history, comparative literature, and other fields. Enrollment is limited to graduate students and superior upper division undergraduates with fluency in German.

*Field Program in Anthropology, Europe.* A four- or seven-month field program in Anthropology in Europe is offered by the Anthropology Department to graduate and advanced undergraduate students in anthropology during the spring or spring and summer. Location of the program in Europe in any given year depends upon the selection of the faculty director. Prerequisites for participation in the program include a working knowledge of the language required for field research and prior coursework in both field methods and the culture area where research is to be conducted. A limited number of stipends are available to offset costs of international travel and maintenance while in the field.

*Grenoble Program.* The University of Massachusetts Semester in Grenoble Program is offered in cooperation with the Comité de Patronage des Etudiants

Etrangers de L'Université de Grenoble and is open to approximately 40 students. The levels of courses offered facilitate the acceptance of students of varied interests and levels of proficiency in French. Students with little or no prior knowledge of the language may pursue studies in the French language and civilization at the elementary level. Majors and other proficient students pursue courses in language, literature, and civilization at the middle or upper level depending on placement by examination upon arrival at Grenoble. Students may choose to live with French families, in "foyers," or in inexpensive hotels catering to students.

*Academic Year Program, Keele University, England.* Through an exchange program, several undergraduates may spend their junior or senior years at Keele University, Staffordshire, England. The program is open to superior students concentrating in social sciences, humanities, and science.

*Academic Year Program, Chelsea College of Physical Education, England.* This is a junior year program for undergraduate women majoring in physical education. A good academic record is required.

*Academic Year Program, University of Victoria, British Columbia.* An undergraduate student exchange program with the University of Victoria, British Columbia, Canada, permits several undergraduates each year to spend their junior or senior years at that university. Courses of study include drama, social sciences, humanities, education, and science.

Other academic year programs through which undergraduates study abroad include student exchanges with the University of Helsinki, Finland; the University of Lagos, Nigeria; University College, Dublin; The University of Lancaster, the University of Sussex, North East London Polytechnic, all in England; the University of Stirling, Scotland; and the University of the West Indies at its Jamaica campus. Semester fieldwork programs include Social Work Internships in England and practice teaching at the Bi-national Center, Bucaramanga, Colombia.

*Summer Programs.* Summer study programs concerning which information may be secured from the International



Programs Office and the *Summer Session Bulletin*, include offerings in Bologna, Italy; Freiburg, Germany; Pau, France; Oxford, England, and St. Vincent, West Indies, the latter in anthropology.

#### **Project 10**

Project 10 is a semi-autonomous experimental program based in Pierpont House in Southwest Residential College. The Project's members are drawn from students and faculty of the University. They participate in a wide variety of seminars, workshops, and tutorials each semester, and attempt to explore different ways of learning and different options on credits and grading. The Project is an attempt to build a living-learning community which can foster and sustain individual growth and personal expression, while its members learn how to make decisions, how to measure learning, and how to accept accountability to others.

A special program option within Project 10, the Inquiry Program, offers an alternative to the general University degree requirements. It is an alternative to the ordinary approach to separate courses and credits in the freshman and sophomore years. In fact, in Project 10 there is nothing called the freshman or sophomore class. Students individually negotiate plans of study for the first 60 credits of undergraduate work. The Inquiry Program seeks individuals who are ready for self-directed learning, both in the classroom and in independent studies, and who believe they can profit from collaboration with a faculty adviser in the design of a total program.

Students with as divergent personal aims as preparing for medical school or exploring communal living are finding Project 10 a human-sized program with many of the virtues of a small college—greater intimacy and intensity of education—yet able to draw upon the resources of a large university.

A wide variety of courses, seminars and workshops are offered by Project 10. For a complete listing, contact the Project Office in Pierpont House, Southwest Residential College.

#### **Rhetoric**

The Rhetoric Program offers a flexible and varied experience for students fulfilling the University's core requirement. The requirement states that all students (with certain exceptions for advanced placement) will take two courses in Rhetoric,

one of which must be Rhetoric 100 or Rhetoric 110. Through an interdisciplinary effort, involving teachers from English and Communication Studies as well as other departments, the Program seeks to give students help and practice in many kinds of writing and oral communication.

In a world where problems of reaching people through words have become crucial to us all, an effort to study and try out for oneself a number of forms of expression becomes a worthwhile educational task. At present the Program devotes attention, in its several courses, to such examples as formal and informal exposition both oral and written, imaginative literature, mass media, and film.

There is no undergraduate major in Rhetoric.

#### **Southwest Residential College**

Southwest Residential College is the largest residential area in the University, and offers a diverse educational program open to all students who live in Southwest. In special cases, non-Southwest students may also enroll. These courses are offered directly in the dormitories or in one of the several educational Centers. The program consists of experimental 3-credit courses designed to meet the needs of the Southwest community and to supplement regular University offerings. It also includes special cross-listed sections of departmental offerings and 1-credit, student-taught "colloquia" offered during the semester and lasting usually for eight weeks.

During the past year, over 70 3-credit experimental courses were offered in Southwest covering women's studies courses, courses for Third World students, courses in racial understanding and interdisciplinary courses in the environment, theatre, art and international communications. These courses included *Women and the Law*, *Women Playwrights*, *Black Psychology*, *Dynamics of White Racism*, *River Ecology*, *Environmental Concerns*, *Cable Television*, and *Theatre Improvisation*. Some courses have been cross-listed with Afro-American Studies, Psychology, Rhetoric and School of Business. The course listings are published each semester in a pre-registration and registration brochure available in the Southwest Academic Affairs Office, John Adams Lobby, during the pre-registration and registration periods.

The Colloquium Program of eight-week, 1-credit student taught courses is very flexible and directly responsive to student interests under faculty sponsorship and staff supervision. There were over 200 colloquia offered this past year, in a wide range of subject areas: arts, crafts, vocational skills; meditative and religious workshops; international communications workshops; survival skills; athletic and physical skills; study groups in criminology, and support groups for Belchertown School and Clarke School for the Deaf tutors. These student taught colloquia are listed as they are proposed and approved during the course of the semester in the Southwest Colloquium Office (John Adams Lobby, Room #1).

In attempting to determine the needs of students both in the University and in the larger community Southwest has recognized two crucial areas of concern: racism and sexism. These issues have been made the express priorities of this residential area, and Southwest's resources are being devoted specifically to these priorities. These priorities are approached in various ways—through specific courses, through counselor training and staff training, and through new programs in Urban-Community Studies and a Transitional Year Program for first-year students. The Urban-Community Studies treat the Southwest area and the University environment as a laboratory for self-study and institutional study. The Transitional Year courses deal with the initial expectations and experience of students as they move from home and high school into Southwest and the University.

Southwest promotes other kinds of interpersonal awareness through its cross-cultural workshops and human relations groups, and community action programs which take Southwest students into neighboring municipalities for service and study. Development of the educational program and the governance of Southwest is a collaborative effort between the staff and the student governing bodies—the Southwest Assembly and the Centers.

Project 10, a semi-autonomous experimental living-learning program primarily designed for students living in Pierpont House, is a distinct though not wholly separate part of Southwest Residential College and its academic program. The educational programs in Mackinmie/Humanity House, Patterson, Co-





George and John Adams are part of the overall Southwest living-learning program in the dormitories.

#### Summer Session

The Summer Session at the University is open to freshmen who wish to begin their college education immediately upon graduation from high school, to seniors completing requirements for September graduation, to other regular University undergraduates, and to special students currently enrolled in other colleges. Graduate courses are provided for area teachers and graduate students who wish to continue their work during the summer. Some courses are offered for professional workers in specialized fields. A bulletin describing the entire summer program is available from the Registrar's Office in April of each year.

Students who begin their college careers in the summer are advised to plan their programs carefully with the aid of advisors.

#### University Without Walls

The University Without Walls program at the University is one of 32 UWW units across the country developed under the sponsorship of the Union for Experimenting Colleges and Universities. The program enables students to earn a B.A. or B.S. from the University of Massachusetts

through a totally individualized learning program allowing independent study, internships, field experiences, credit for significant past learning experience, and other self-directed projects outside the classroom and campus. It welcomes participants of all ages and diverse backgrounds and interests, especially those who would not normally have access to the University but who are highly motivated and self-disciplined enough to succeed in directing their own learning projects. Upon admission to the program, students choose a faculty sponsor and adviser and prepare a learning contract outlining learning objectives, activities to meet those objectives, and evaluation procedures. Students must negotiate 120 credits in order to receive a degree, including University Core Requirements (33 credits) and residence credits (45 credits). Further information and applications may be obtained from the University Without Walls, Wysocki House.

#### University Year for ACTION

University Year for ACTION is a volunteer service program which offers undergraduates significant opportunities for attacking poverty in connection with community agencies while earning normal college credit. Students accepted into the program become Volunteers in

ACTION (a new federal agency comprising Peace Corps, VISTA, and several other federal volunteer programs). The students work full-time or part-time, living on campus or in a local community located either in a major city or in a rural center of Western Massachusetts.

Service in a community agency may be in any one of a number of given areas, including those of legal services, education, mental health, housing, consumer protection or environmental protection. Community agencies provide field direction and supervision, while the University provides instruction, academic credit, and program management.

The University Year for ACTION program represents a new model for education—a model of effective service to the larger community and of a reciprocal exchange of resources, needs and personnel. Details concerning eligibility, application procedures, stipends, tuition, fees and other information are available at the ACTION Office, Arnold House.

#### Upward Bound

Upward Bound is an educational experience, motivating disadvantaged high school students to try for college. Upward Bound offers a summer academic program for 25 students on the campus and a "Follow-up" program from September through May to some 95 high school sophomores, juniors, and seniors. Typically, Upward Bound students come from a poverty background where they often have been labeled as "non-college" potential or "troublemakers." Consequently, with the support of the Committee for the Education of Black Students (CCEBS), Upward Bound strives to offer a wide range of academic, financial, and supportive services to these Black, Puerto Rican, and white students from poverty backgrounds drawing from the total resources of the University community.

## Schools, Colleges, Departments and Programs

Undergraduate MAJOR programs are available in the following areas:

### College of Arts and Sciences

#### *Faculty of Humanities and Fine Arts*

Afro-American Studies

Art

Chinese

Classics

Comparative Literature

English

Fine Arts

French

German

History

Italian

Japanese

Journalistic Studies/English

Music

Philosophy

Russian

Spanish

Theater

#### *Faculty of Natural Sciences and*

##### *Mathematics*

Astronomy

Biochemistry

Botany

Chemistry

Geography

Geology

Mathematics

Microbiology

Physics

Zoology

#### *Faculty of Social and Behavioral*

##### *Sciences*

Anthropology

Communication Studies

Economics

Political Science

Psychology

Sociology

#### *Interdisciplinary Programs*

Classics & Philosophy

Judaic Studies

Linguistics & Philosophy

Linguistics & Chinese

Linguistics & German

Linguistics & Japanese

Linguistics & Russian

Mathematics & Philosophy

Near Eastern Studies

Science

Social Thought & Political Economy

Soviet & East European Studies

### School of Business Administration

Accounting

General Business & Finance

Management

Marketing

### School of Education

Education

Human Development

### School of Engineering

Chemical Engineering

Civil Engineering

Computer Systems Engineering

Electrical Engineering

Industrial Engineering & Operations

Research

Mechanical Engineering

### College of Food and Natural Resources

Animal Sciences

Entomology

Environmental Design

Environmental Sciences

Fisheries Biology

Food & Agricultural Engineering

Food Marketing Economics

Food & Resource Economics

Food Science

Forestry

Home Economics

Hotel, Restaurant, & Travel

Administration

Human Nutrition

Natural Resource Studies

Park Administration

Plant Pathology

Plant & Soil Sciences

Wildlife Biology

Wood Technology

### School of Health Sciences

Communication Disorders

Community Health & Health Education

Environmental Health

Health Laboratory Science

Medical Technology

Nursing

Public Health

### School of Physical Education

Leisure Studies & Services

Physical Education

Sport Studies

## College of Arts and Sciences

The College of Arts and Sciences has programs of study leading to four bachelor's degrees: Bachelor of Arts, Bachelor of Science, Bachelor of Fine Arts, and Bachelor of Music. All departments offer a program leading to the B.A. degree. The B.S. degree may be earned only if the major is mathematics, science, or psychology. The B.F.A. programs have a strong emphasis in art and the Bachelor of Music programs reflect an emphasis in music. All of the degree programs combine a study in depth in one area with supporting study in the other two of the three main divisions: a) Humanities and Fine Arts b) Social and Behavioral Sciences, and c) Natural Science and Mathematics. Courses appropriate to the distribution requirements in these three areas are noted in University catalogs by the respective codes (C), (D), and (E).

A program of study which conforms with the following five provisions qualifies a student who completes it for the appropriate degree. Advanced placement and transfer credits may be applied toward any or all of these qualifications but at least half of the major program must be completed in residence.

1) A basic proficiency or experience in communicative skills must be achieved by completing six credits in rhetoric; the two rhetoric courses must include at least one of Rhetoric 100 or 110.

2) For the B.A. and B.S. degrees, a basic proficiency or experience with a foreign language must be demonstrated by a) completion of a foreign language course at the 140 level, b) score of 600 or above on a CEEB achievement test while in high school or placement test at the University, c) satisfactory completion in high school of a fourth-level foreign language course or a third-level course in one foreign language and a second-level course in another, d) a year in high school in which English is not the basic language of instruction, e) substitution of language-related study with proper authorization (see CASIAC).

3) Distribution is achieved by completion of courses in each of the two divisions of the College other than the one in which the major falls. With the understanding that work in the major is applicable to one or more of these divisions, this qualification is stated for all three divisions and all degrees as:



| Division                       | Core Code | Number of Courses |       |               |   |
|--------------------------------|-----------|-------------------|-------|---------------|---|
|                                |           | B.A.              | B.S.* | B.F.A./B.Mus. |   |
| Humanities                     |           |                   |       |               |   |
| Bachelor of Fine Arts          | "C"       | 4                 | 3     | 3             | 3 |
| Social and Behavioral Sciences | "D"       | 4                 | 3*    | 3             | 3 |
| Natural Science                |           |                   |       |               |   |
| Bachelor of Mathematics        | "E"       | 4                 | 4*    | 3             | 3 |

\*To qualify for a B.S. degree, at least 60 credits must be earned in science, mathematics, and/or psychology courses; distributional courses may be part of this minimum of 60.

An approved major program of the college must be completed. The traditional departmental major programs are the most common, and they are described in the following pages. A few others, including several interdepartmental majors, are specified and administered by standing committees of the faculty and are described elsewhere. All major programs have these features in common: a) faculty guidance, b) coherent program of study made up of at least 24 credits, at least 15 of which must be in upper division courses in this college, and c) a student has at least 12 completely free electives.

**Advisory System:**  
When students elect a special major or are admitted to a specialized degree program, they may obtain a faculty adviser from that major. Faculty advisers help students choose their program of study and also serve as a communication link between students and the Registrar's Office. Students may choose a specific major on entrance or they may postpone this choice until the fourth semester. Until choosing a specific major, students are listed as a College of Arts and Sciences major, and the College of Arts and Sciences Information and Advising Center (CASIAC) serves as a student's adviser. Faculty members from a broad range of disciplines form the staff of CASIAC, and a student may meet with the same staff member or may talk with whomever is on duty at the time. A primary goal of the Center is to help a student choose a major which is consistent with his or her interests and potentialities.

A student has considerable freedom in choosing a program of study and major. However, a few of the major programs require sequences of courses which extend over seven or eight semesters. Students who do not take the right courses in their freshman year may have to use a summer session or extra semes-

ters to accommodate these sequences if the ultimate major is Astronomy, Biochemistry, Chemistry, Mathematics or Physics, or if they are in the Bachelor of Music or Bachelor of Fine Arts program. Some standard freshman year programs are:

**Bachelor of Fine Arts:**

|                     |                           |
|---------------------|---------------------------|
| Rhetoric            | and two of the following: |
| Introduction to Art | Math or Science           |
| Studio Art          | Humanity                  |
|                     | Social Science            |

**Social Science (B.A. or B.S.):**

|                |                           |
|----------------|---------------------------|
| Rhetoric       | and two of the following: |
| Social Science | Humanity or Fine Art      |
|                | Math or Science           |
|                | Second Social Science     |
|                | Foreign Language          |

**Mathematics (B.A. or B.S.):**

|                 |                           |
|-----------------|---------------------------|
| Rhetoric        | and one of the following: |
| Math (Calculus) | Foreign Language          |
| Science         | Social Science            |
|                 | Humanity                  |

**Bachelor of Music:**

|                  |                           |
|------------------|---------------------------|
| Rhetoric         | and two of the following: |
| Music Theory     | Math or Science           |
| Music Literature | Social Science            |
|                  | Humanity,                 |
|                  | other than Music          |

**Humanity (B.A.):**

|             |                           |
|-------------|---------------------------|
| Rhetoric    | and two of the following: |
| Humanity or | Foreign Language          |
| Fine Art    | Social Science            |
|             | Math or Science           |
|             | Second Humanity           |

**Science (B.A. or B.S.):**

|                         |                           |
|-------------------------|---------------------------|
| Rhetoric                | and one of the following: |
| Chemistry               | Foreign Language          |
| or Physics*             | Humanity                  |
| Math                    | Social Science            |
| (Calculus, if prepared) | Second Science            |

\*Chemistry Majors elect Chemistry 113; Biology and Geology majors elect Chemistry 111; and Physics and Astronomy majors elect Physics 181.

### FACULTY OF HUMANITIES AND FINE ARTS

**Afro-American Studies, W. E. B. DuBois Department of**  
The W. E. B. DuBois Department of Afro-American Studies offers an undergraduate major for those students who wish to gain an in-depth knowledge of the history and culture of Black people in Africa and the New World. The course of study is inter-disciplinary, and offers the stu-

dent an opportunity to participate in a variety of learning situations, both on and off the campus. This major provides foundations for students who have professional aspirations toward teaching or advanced scholarship in a given discipline in the social sciences or humanities. It is also suitable for students preparing for professional training in law, public administration, journalism, social work, community organizing, and other such fields. Further, this major can be of value to students interested in the creative and performing arts, in that one of its concentration areas includes music, dance, theatre, and the plastic arts.

Courses and programs are also designed for general interest and specific relevance to students in disciplines other than Afro-American Studies.

The maximum of 45 required major credits incorporates a number of disciplines in the social sciences and humanities. After taking a prescribed introductory core of 18 credits, the student may concentrate in the social sciences, history, or the humanities in which he or she is required to take 27 additional hours, including a field research project or equivalent and a senior thesis. Approved courses in other departments of the University or in other schools in the Five College consortium may be credited toward this major.

### Art ENTRANCE PROCEDURES

Portfolios are required from all applicants except those applying for the B.A. in Art History. The portfolio should be in the form of 35mm colored slides of at least ten works. Slides must be submitted in a 9" x 11" clear plastic viewing sheet, each slide labelled with name, medium, and size. Slides should not be sent until requested by the Admissions Office. Portfolio examination for admission to the Art Department will be based on the criteria of demonstrated ability and high academic standard.

### PROGRAMS

**Bachelor of Arts Degree Program**—The B.A. degree program is designed to provide an aesthetic and historic knowledge of the visual arts while affording an opportunity to develop creative ability. While all programs are subject to University requirements, the B.A. degree program requires a greater involvement than the B.F.A. degree program in courses not directly within the Art Department. The



B.A. degree program offers two majors: Art History and Studio.

The B.A. in Studio requires a minimum of 42 art credits (six elementary courses—100, 102, 120, 122, 111, 113—and eight upper division courses—numbered 200 and above, two of which must be art history electives.) The B.A. in Art History requires a minimum of 30 art history credits (six credits at the introductory level—111, 113—and 24 upper division credits, which will include at least one seminar—300 level course). As the declaration of the major is prerequisite to the selection of a faculty advisor, it is best to declare an Art History major within the freshman or sophomore years. Art History is taught as an area of the humanities tying in with the history, literature and philosophy of a given culture or period, and forming part of the history of ideas in general. Course offerings in the area are organized to provide three levels of instruction: a) Introductory Survey (100 level), b) Area Courses (200 level), c) Seminars (300 level). The student consults with the faculty, especially in the final two years, to develop the sequential program best suited to the student's needs and interests. Directed undergraduate work, including the writing of an honors thesis, may be elected by qualified students.

**Bachelor of Fine Arts Degree (Studio)**—During the first two years, the student experiences a foundation program of several courses in drawing, two and three dimensional design and a general history of art. Because of its contemporary nature and relevance, it is required that Modern Art 287 be taken as early as possible by B.F.A. degree program candidates. The B.F.A. program in Studio Art is of a professional nature and enlists the most intensive coverage of one chosen medium: ceramics, printmaking, sculpture or painting, to be selected by the end of the sophomore year. The B.F.A. degree program consists of fewer core requirements to allow for concentration within the Art Department. It involves a minimum of 60 credits in studio art, 12 in art history and 48 credits in other disciplines for satisfaction of the University Core and graduation credit requirements.

**Bachelor of Fine Arts (Studio with Art Education)**—This program provides the student with the Massachusetts State Board of Education requirements for certification to teach Art in public school

system at either the elementary or secondary level. The programs minimal requirements include 39 credits in studio art, 12 in art history, 6 in art education, 15 in student teaching, 9 in education and psychology and 39 in other academic disciplines to satisfy the University Core and graduation credit requirements.

**Bachelor of Fine Arts (Design)**—The Design program is a professional area offered as an option within the Art Department. The requirements are similar to those of the other programs in the Department and lead to a B.F.A. degree in design. The Design area is an interdisciplinary program of studies incorporating professional courses from related departments of the University such as Environmental Design and Landscape Architecture. Individualized programs are possible through course offerings from art and design; however, the main professional sequence is structured toward Human Environment and Design, or Interior Design. The program is intended to meet professional standards set forth by the national, professional and educational associations in the field of design for accreditation and professional standing. The program's educational goal aims at educating the professional designer in basic design, in communication skills, in architectural construction with emphasis on interior detailing, in planning, in related phases of environmental design, in history and general knowledge, and in planning and designing all interior spaces. Designers must learn to understand techniques of programming, analysis of spaces, and must be trained and encouraged to develop breadth and depth of design solutions both for today and tomorrow.

#### Asian Studies

There are majors leading to the B.A. in both *Chinese* and *Japanese* language and literature in which students may place emphasis on either modern or classical language. Students following either major receive a substantial foundation in reading, speaking and understanding the language, as well as a basic knowledge of the respective literatures. Majors are encouraged to acquire a background in the history, government, society, religion, and arts of China and Japan—a background essential for an understanding of the cultures and literatures of the Chinese and Japanese people.

In addition to courses offered in lan-

guage and literature in the Asian Studies Program, various departments in the University and the Five College system offer courses dealing with specific aspects of China, Japan and other part of Asia. Consult offerings of the Departments of Anthropology, Art, Comparative Literature, Geography, History, Political Science, and Sociology.

The program also offers, in cooperation with the Linguistics Department, two joint majors: Linguistics & Japanese and Linguistics & Chinese.

Undergraduates interested in Asian Studies may wish to enroll in the University's Asian Studies Certificate program. The program does not constitute a major and is designed to supplement the work done toward a bachelor's degree in a regular discipline. Students who fulfill program requirements are awarded the Certificate in Asian Studies attesting to their attainment. Requirements for the Certificate are a total of 24 credit selected from the Asian Studies course list. There are no language requirements for the Certificate; however, any student interested in the serious pursuit of Asian Studies is strongly urged to acquire competence in an Asian language.

#### Classics

The study of ancient Greek and Roman civilization and culture, the oldest of humane disciplines, occupies a position central to all the humanities and still forms a broad base for the disciplines of history, English, philosophy, art history, comparative literature, and religious studies. It can provide a meaningful core in every student's education.

Courses labeled "Classics" on the 100 and 200 levels are offered for purposes of general education. They require no knowledge of Latin or Greek; all reading is done in English translation. Courses of this type are offered in Greek and Roman civilization, ancient mythology, Greek and Roman archaeology, and Greek and Latin literature in translation.

There is also a special language skill course in Greek and Latin elements in English designed to increase the student's knowledge and understanding of English vocabulary by study of the root prefixes, and suffixes incorporated in English from Greek and Latin. A full range of courses is offered in the Latin language and its literature.

The offerings in Greek (Classical, New Testament, and Modern) may be supplied

ented with courses at the neighboring colleges.

#### THE MAJOR

A student who majors in Classics may choose one of the following areas of concentration: 1) Classical Civilization and Literature, 2) Greek, 3) Latin, 4) Mediterranean Archaeology, and 5) Religion. A description of each of these areas of concentration may be obtained from the Department of Classics. A separate interdepartmental major in Classics and Philosophy is available.

The Classics major can provide 1) a meaningful humanistic core in a liberal education, 2) preparation for graduate study in the Master of Arts in Teaching program at this University for those who wish to teach Latin and Classics on the secondary school level, 3) preparation for graduate work elsewhere leading to the Ph.D. and teaching on the college level, and 4) preparation for seminary, biblical school, or other graduate level religious studies, and 5) preparation for graduate work elsewhere in Mediterranean Archaeology, leading to careers in teaching, field work, or museum work.

#### ADVISERS

Classics majors may select any member of the Classics faculty as an adviser. Students with a special interest in secondary school teaching should consult Associate Professor Vincent Cleary. Those with a special interest in pre-seminarian studies should consult Assistant Professor Charles Isbell. Those interested in Mediterranean Archaeology should consult Assistant Professor Elizabeth Will.

#### HONORS

The Department offers Honors work in five of the concentrations listed above. For specific requirements, consult the Department.

#### PRIZES

The Department of Classics regularly awards prizes of \$50 each from the Millicent C. Davis Memorial Scholarship Fund. The prizes are awarded for 1) the highest level of attainment in Latin by an entering freshman, 2) the outstanding student in Elementary Greek, 3) the best essay on a subject in the field of Classics, and 4) the best student of the year in the Latin program. For further details about these prizes, and for application forms, consult the Department.

#### SCHOLARSHIPS AND STUDY IN ITALY AND GREECE

The Department awards a scholarship of \$1,000 each spring semester to a Classics major for study at the Intercollegiate Center for Classical Studies in Rome, Italy. Consult the Department for further information.

Consult the Department for information about study programs in Italy and Greece both during the academic year and during the summer. The Department maintains a list of archaeological digs where students may receive training and experience in archaeological excavations.

#### Comparative Literature

Three different types of programs lead to the B.A. degree in Comparative Literature. The first involves the study of literature in two languages, a major and a minor; one of these may be English. Majors must also fulfill a requirement in a third language, preferably ancient, either by taking six credits of elementary course work or by passing the appropriate proficiency examination. A student has to take 42 upper-level credits of course work, not including the work done in the third language: 15 in the literature of the major language, 12 in the literature of the minor language, and 15 in Comparative Literature (including 3 directed toward the literature of the major language).

The second type of program involves the relation of literature studied in two different languages, a major and a minor (one of which may be English) to one other discipline (e.g., art, philosophy, anthropology, psychology, linguistics, sociology). The normal program will consist of 48 upper-level credits of course work, distributed as follows: 12 in the department of the related discipline, 12 in the major literature, 9 in the minor literature, and 15 in Comparative Literature. The third program involves the study of literature equally in two languages. The normal program will consist of 45 upper-level credits of course work, distributed as follows: 15 in the literature of one language, 15 in the literature of a second language, and 15 in Comparative Literature.

Neither language department courses taught in translation nor Comparative Literature courses numbered lower than 300 may be counted toward the major. COMLIT 380 (Theories of Literature), is

required of all majors. A more detailed and fully explained statement of the Comparative Literature major may be obtained at the departmental office.

#### English

The English Department offers a wide variety of courses which attempt to cover not only British and American literature but the literatures of all English-speaking people. As a result, the opportunities for a liberal education — a broadening and deepening of awareness to values expressed by writers of our own time, of past centuries and of various nations and ethnic groups — are plentiful. Aside from studying literature, English majors are encouraged to study creative and expository writing, folklore, film and other related subjects such as linguistics and journalism. Students who major in English are exposed to important literary works and are expected to develop those skills necessary to understand and evaluate literature as well as to express their opinions concerning it coherently and persuasively. All undergraduate programs in English are administered in the Department's Undergraduate Studies Office in Bartlett Hall. The Program in Journalistic Studies is also administered there. The Department's Chief Adviser, Donald Cheney, and the Director of Undergraduate Studies, Walker Gibson, are available in that office to assist students with problems involving transfer credits in English, departmental requirements, scheduling and planning courses of study.

There are two options for majoring in English, and students are required to complete one of the options. Option A requires students to study various approaches to literature: one course in a pre-modern period; one course in literature not written in English; three of the four following kinds of literature: a course in language, a course in Shakespeare, a course in an individual author besides Shakespeare, and a course in a literary genre such as tragedy, lyric poetry or satire. Option B requires students to complete a survey of major authors: two courses in masterpieces of Western literature, two courses in major British authors, and one course in Shakespeare. Both options invite students to elect their remaining courses to form programs of study which are coherent and which accord with their own interests or needs. To assist in this planning, various mem-



bers of the Department are available to help students plan programs which focus on period studies, (such as Medieval or Victorian studies), American civilization, women's studies, film studies, folklore or a number of other areas. The English major must complete 30 credits in upper level courses (i.e., courses numbered above 200). Up to six of these credits may be substituted by upper level courses in related areas such as journalistic studies, linguistics, foreign language, comparative literature, or speech courses related to literature. All questions regarding what can be substituted should be directed to the Department's Chief Adviser.

Students who wish to graduate with Honors in English must take at least four upper level courses designated as Honors English courses, have a minimum cumulative average of 3.2, and choose to either write a thesis or take an additional two Honors English courses. Students who wish to be certified to teach English in secondary schools must apply to the Chairman of the English Education Committee; successful completion of the major requirements does not automatically ensure students a place in the English Education program.

#### JOURNALISTIC STUDIES

Journalistic Studies is a program of the English Department offering a joint major with that department. The student is required to earn 15 credits in Journalistic Studies and to complete the requirements of the English major with some exceptions. An adviser should be consulted.

The Journalistic Studies courses provide background for students interested in diverse career objectives such as newspaper work, radio and television news work, publishing and writing. Some students find Journalistic Studies valuable as a preparation for careers in law, public service, and business. Students interested in the Journalistic Studies Program should contact Professor Howard M. Ziff.

#### French and Italian

##### FRENCH

The vast richness of France's long cultural life — royal, imperial, and republican — as well as the tenacity of France's citizenry wholeheartedly bound to that life, have given the world an unforgettable gift. Apart from the natural grace and

incisiveness of its language, French literature, rarely stolid, is a continual and exhilarating plunge into intellectual and spiritual turmoils committed to an understanding of human dilemma. For that reason, the best of French literary works needs no dusting off to be appreciated today, for they either forecast or they are already the contemporary image of a questioning, vibrant civilization. Ties of language bind parts of Belgium and Switzerland to metropolitan France, but without loss of identity, while new, different, and often brilliant expressions of man's condition emerge with increasing rapidity from artists in French Canada, Africa and the Antilles.

Students planning to major in French have access to programs ranging from language skill courses at all levels to a rich body of courses devoted to literature and civilization. To supplement the major, requirements of which are outlined in several other brief documents, students are urged to take advantage of our overseas programs in Grenoble and Pau, or to spend their entire junior year in Paris under the auspices of the University of Massachusetts - Boston. Majors will also find living in the French Corridor not only a successful way of learning spoken French outside of the classroom, but also an important introduction to life in France. The department regularly invites exceptional scholars to spend a semester or year on campus to teach undergraduate courses; it also receives the annual visit of a theatrical troupe offering a varied repertoire; it makes available a film series open to the public.

Special departmental advisers determine the major's proper placement within the department, help to formulate the future program of each student, and help resolve academic problems that may arise during the major's four years on campus; other special advisers clarify overseas programs. For their part, majors may and should elect (within the limits of the 36-credit major field) related courses in other fields: philosophy, art history, English literature, French history, and so on. Advisers will always assist majors in selecting those extra-departmental courses meant to enrich and enhance the major field.

The major in French is carefully designed both in breadth and in depth to form the well educated citizen. At the same time, portions of the major program are calculated to prepare for teaching at

the secondary level and for possible careers in business, civil service or interpretation. The major can also serve as preliminary training leading to the degrees of Master of Arts, Master of Arts in Teaching, and the Doctor of Philosophy. Students may wish to discuss many additional programs leading, for example, to foreign service careers or posts requiring both a proficiency in spoken French as well as a wide knowledge of French thought and life. As a support for future professional life, the French language is used exclusively in all major courses.

For complete information concerning the major in French, please consult Professor Micheline Dufau, Chairman of the Department of French and Italian.

##### ITALIAN

Students planning to major in Italian have access to programs ranging from language skill courses at all levels to a rich body of courses devoted to literature and civilization. Apart from the beauty of its language, Italian literary works are among the most appreciated today for their probing questioning of historic events and social phenomena.

The major in Italian is carefully planned both in breadth and in depth to form the well-educated person. At the same time aspects of the major program are designed to prepare for teaching at the secondary school level and to serve as a preliminary training leading to the degrees of Master of Arts, Master of Arts in Teaching, and the Doctor of Philosophy. Students may wish to discuss many additional programs leading, for example, to foreign service careers or posts requiring both a proficiency in spoken Italian as well as a wide knowledge of Italian life and thought. As a support for future professional life, the Italian language is used exclusively in all major courses.

Special departmental advisers determine the major's proper placement within the department, help to formulate the future program of each student, and help resolve academic problems which may arise during the major's four years on campus. Majors should elect (within the limit of the 36-credit major field) related courses in other fields such as philosophy, Italian history, Italian literature, and upper division courses in other languages. Advisers will always assist the major in selecting those extra-departmental courses intended to enrich and



enhance the major field. To supplement the major, requirements of which are outlined in other brief documents, students are urged to join an approved program in Italy for at least one summer.

For complete information concerning the major in Italian, please contact Professor Anthony Terrizzi, Undergraduate Adviser for Italian Studies.

### **Germanic Languages and Literatures**

To fulfill undergraduate major requirements in German, a student must take German 161 and complete 32 credits in the department's junior-senior courses. Two programs are available: Program A (language) is designed principally for those who wish to teach in elementary or secondary schools or for those whose interest is not primarily in literature; Program B (literature) is for those who are chiefly interested in continuing their studies in graduate school.

Students selecting Program A should take 161, 201, 202, 211, 221 or 222, 241, 242, 283, 284, or 285, and a minimum of two more courses in German, one of which must be in 20th-century literature (331, 332, 333, or 334). Students in Program A who are not planning to follow a teaching career may substitute another junior-senior course for 283.

Students selecting Program B should take 161, 201, 202, 211, 221, 284, 321, 391, and three courses chosen from the following: 301, 302, 303, 311, 312, 313, 331, 332, 333, and 334.

Students are urged to augment their course work with at least one summer session at an approved summer school of German or by participating in a German program abroad, such as the University offers in Freiburg, Germany.

### **History**

Courses in history are designed to provide an understanding of man through a study of patterns of development in the past. The study should also give the student an introduction to major problems of world affairs. A major in history has value to the general student as a humanistic discipline. It has application as preparation for careers in such fields as teaching, law, government, journalism, ministry, library science and business.

History majors must take as required courses in their freshman and sophomore years two year-long sequences chosen from HIST 100-101 or 110-111, 115-116, 120-121, 130-131, 140-141 or 146-107, and 150-151 or 152-153. The his-

tory major will select one of five areas of specialization (European, British, American, Latin American, or East Asian history) and take within it a minimum of 8 courses numbered 200 and above (totalling not less than 24 credits). Students specializing in European history will be required to include in their program at least 3 credits in ancient or medieval history and an additional 3 credits in the early modern period (from the Renaissance through the 18th century). An additional two or three courses in electives outside the area of specialization are required, for a total of at least 12 courses (totalling not less than 36 credits) in lower and upper-level history courses. (A more complete statement of the requirements for the history major is available from the Department.)

### **Linguistics**

Though it is a humanistic discipline, linguistics is best described as the science of human language. Through the scientific study of the structure of language, linguists seek to understand the nature of that human mental faculty by which we produce speech from an intended meaning, understand meaning from spoken or written language, and acquire our native language. Linguists study the nature of the knowledge a human being possesses when he "knows" his native tongue.

No undergraduate major is offered in Linguistics alone, but students may major jointly in Linguistics & Philosophy, Linguistics & German, Linguistics & Russian, Linguistics & Chinese, and Linguistics & Japanese. Courses in Linguistics also are counted for major credit in several departments, and are relevant to majors in English, the foreign languages, Anthropology, Communication Studies, Psychology, Philosophy, and Computer & Information Sciences.

### **Music and Dance**

The Music and Dance Department offers programs of study leading to the Bachelor of Music and Bachelor of Arts degrees. An audition is required of all applicants.

The Bachelor of Music degree is awarded upon completion of University core requirements and a concentration in one of three areas: Theory-Composition, Performance, and Music Education (Vocal or Instrumental). Each area of concentration consists of specialized courses in particular fields as well as a

departmental core of applied music, theory, history and literature, and piano proficiency.

The Bachelor of Arts degree may be earned by the completion of University core requirements, additional College of Arts and Sciences requirements (language, humanities, and sciences), and a concentration in Music History, Theory-Composition, Performance, and Dance. The music core requirements are identical with those of the Bachelor of Music degree.

All programs contain course sequences in theory and applied music designed as four-year programs. A student not entering as a freshman may abbreviate his or her program only by advanced placement or by appropriate transfer credit.

The audition serves to determine the selection of the area of concentration as well as the qualification for music study. Instrumental Music Education applicants presenting piano or organ as a primary instrument must also present a strong secondary band or orchestral instrument. Vocal Music Education applicants presenting piano or organ as a primary instrument are also expected to meet voice study requirements.

Students not majoring in music may select non-specialized courses in music appreciation, music history, applied music (subject to prior audition), and participation in the various performing groups which are open to all University students.

Professor Horace Boyer is chief adviser for undergraduates.

The Music Department is a member of the National Association of Schools of Music.

### **Philosophy**

Philosophy deals with questions of central and perennial human concern: large questions, having to do with reasoning, or right and wrong, or man, or the world, in general terms; and small questions about the fine structure of knowledge, existence, and value. There is a special pleasure in thinking about such questions, and in learning how to think about them clearly, responsibly, and effectively. The study of philosophy acquaints one with an important part of our common intellectual heritage; it also helps develop habits and skills that serve one well in other fields and disciplines, and indeed in daily life.

The core fields in philosophy are logic, ethics, metaphysics, and theory of knowledge. There are also specialized fields, such as philosophy of science, political philosophy, aesthetics, philosophy of religion, and philosophy of language. A student may wish to develop a competence in one of the specialized fields, or in the philosophy of a certain period (e.g., ancient philosophy or the philosophy of the 17th century), or in a particular school or style of philosophy (say existentialism, or analytic philosophy).

The Philosophy Department offers courses in all areas of philosophy at all levels, from the most elementary to the most advanced. Majors in philosophy take 30 credits in departmental courses. No particular course is required, but each major has to have one semester course (3 credits) in logic, one in ethics, and four in the history of philosophy. The 100-level courses may be counted in meeting these requirements.

Students with specialized interests can arrange independent study courses; and those with a B average or better can do honors work in their senior year, in which an honors thesis, written under the supervision of a faculty tutor, is presented in lieu of 6 of the required 30 course credits.

The Department also offers a Teacher Preparation Program designed for students, who wish to teach philosophy in secondary schools. Three joint major programs in which philosophy is combined with classics or linguistics or mathematics, are also available. These are administered by Philosophy in cooperation with the other departments concerned.

Professor Gareth Matthews is Director of Undergraduate Studies and chief adviser for philosophy major.

The Department also offers three interdisciplinary majors: Classics & Philosophy, Linguistics & Philosophy, and Mathematics & Philosophy.

#### Slavic Language and Literatures

The Russian major is a relative newcomer in the curricula of most of our major educational institutions. Yet the importance of Russian, along with Chinese and English, as one of the three major world languages cannot be denied. The major role played by the Soviet Union in world affairs makes it essential to keep informed about all aspects of

Soviet life. Moreover, the Russian language is the vehicle of one of the world's great literatures, as well as the avenue of an increasing body of vital technological information.

The Russian major aims at maximal proficiency in all four language skills; for this reason, language study is the most significant component of the major program. Opportunity is also provided for the student to achieve a background in the literature and history of Russia, as well as to gain some competence in related areas of economy, political science, sociology and anthropology.

The range of career opportunities open to the Russian major includes service in the Federal government, in private business, in library work, in research institutions, in the mass media and in the teaching of Russian at all educational levels. The study of Russian also provides a rich and rewarding cultural experience and an expanded knowledge and understanding of the Russian people and their society.

Department requirements for a major are the successful completion of:

a) Six semester courses of language study at the junior-senior level (18 credits): RUSS 261, 262, 271, 272, 281, 282.

b) Two semester courses of literature study at the junior-senior level (6 credits): RUSS 291, 292.

c) At least two additional courses within the department, to be chosen in consultation with an adviser on the basis of the student's post-graduate plans.

d) Two semester courses in Russian History: HIST 214, 215.

The student is encouraged to select more than the minimum number of required courses in order to achieve the strongest possible background in the discipline. The choice of additional courses, both within and outside the department, will depend in large measure on the student's career plans. For this reason, it is essential that majors and prospective majors consult early and often with the departmental advisers. Professor J. Joseph Lake is chief adviser for the department.

#### Spanish and Portuguese

The department offers a major in Spanish and a number of courses in Portuguese. A major in Portuguese is planned.

All the department's programs stress training in and the use of language skills.

The courses in Hispanic literature are taught for their basic literary values and for the insights they provide into the cultures of Spanish- and Portuguese-speaking peoples. The department also offers courses which directly stress the use of the Spanish language and which are of particular advantage to those Spanish majors who plan to teach the language. Students are provided with opportunities to combine field work and community service with their academic programs.

The undergraduate major program consists of 42 junior-senior credits, up to nine of which may be in related areas and disciplines approved by the department. Entering Spanish majors who achieve an intermediate year level in the placement tests are urged to take SPAN 146, an intensive course which will permit them to start their Spanish concentration one semester sooner than if they were to take SPAN 130-140, the usual intermediate course.

Prerequisites to a major in Spanish are the following courses: SPAN 150-155 and 180.

Students may choose one of three areas of concentration for a major in Spanish. These areas are: A) Literature, B) Linguistics, and C) Bilingual Studies. All areas of concentration have as a common requirement two introductory literature courses and three courses in Conversational Spanish: SPAN 250, 251, 252. (one credit each). The successful completion of the following programs are required for each one of the designated areas of concentration. (Consult Department for current requirements.)

#### 1) Literature

- a) One course from the Medieval Literature group.
- b) One course from the Renaissance and Golden Age Literature group.
- c) One course from the 18th- and 19th-Century Literature group.
- d) One course from the 20th-Century Peninsular Literature group.
- e) One course from the Spanish American Literature group.
- f) Five electives.

#### 2) Linguistics

- a) One course from the Medieval Literature group.
- b) One course from the Renaissance and Golden Age Literature group.
- c) One course from the 18th-, 19th- or 20th-Century Peninsular Literature group.



ture groups or from the Spanish-American Literature group.

- d) Six courses from the Language and Linguistics group.

#### Bilingual Studies

- a) Two courses in Hispanic Culture.
- b) One course in Hispanic Literature of the Caribbean.
- c) Three courses that introduce the student to Hispanic linguistics, Caribbean dialectology, and history and theory of Hispanic bilingualism.
- d) Five electives.

#### Theater

The course of study in the Department of Theater is grounded in the belief that the performing arts draw on a unique combination of a variety of intellectual and artistic skills and talents which are most fully developed when theory and practice are integrated in the learning experience. Students in the program gain expertise in all the fundamental areas of theatrical art in graduated sequences of study designed to bring into focus rigorous critical thinking, precise methods of research, and imaginative expression in performance.

#### SEQUENCE OF STUDY

|                                                     |           |
|-----------------------------------------------------|-----------|
| Introduction to theater                             | 3 credits |
| Prerequisites: none                                 |           |
| Theater Practice                                    | 1 credit  |
| Prerequisites: none                                 |           |
| (may be repeated; 3 credits are required of majors) |           |

#### Basic Techniques

|                                                                                    |           |
|------------------------------------------------------------------------------------|-----------|
| Prerequisites: Introduction to Theater and at least 1 credit of Theater Practices) |           |
| Scenography                                                                        | 3 credits |
| Dramaturgy                                                                         | 3 credits |
| Performance                                                                        | 3 credits |

#### Intermediate Techniques

|                                                  |           |
|--------------------------------------------------|-----------|
| Prerequisite: completion of all basic techniques |           |
| Scenography                                      | 9 credits |
| Dramaturgy                                       | 9 credits |
| Performance                                      | 9 credits |

In addition, students may elect up to 18 credits of advanced course work in scenography, dramaturgy, and/or performance when intermediate-level work has been completed in the corresponding area(s).

Freshmen who think they may wish to

major in theater should elect Introduction to Theater, which also satisfies one of the four course requirements in the Humanities and Fine Arts core (C).

Basic techniques in scenography, dramaturgy, and performance are normally completed during the sophomore year. Opportunities to test out of basic techniques are provided regularly by the Department of Theater. The bulk of the 56 credits required by the College of Arts and Sciences should be earned before the beginning of the junior year. Intermediate and advanced course work is usually completed during the junior and senior years.

Non-majors with appropriate qualifications are welcome to participate in the activities of the Department of Theater. Introduction to Theater is strongly recommended before course work at the basic and intermediate levels. Enrollment of non-majors in all upper-level courses is permitted after completing (or testing out of) basic techniques in the specific area(s) of interest. Department majors are given preference in placement at all levels within the program.

With the exception of Introduction to Theater and Theater Practice, enrollment in theater courses is by permission of designated department advisers only. It is imperative, therefore, that all majors, prospective majors, and non-majors consult with a department adviser to determine eligibility for and appropriate placement within the various curricular activities.

## FACULTY OF NATURAL SCIENCES AND MATHEMATICS

### Biochemistry

*Undergraduate Advisers:*  
Class of 1977: Dr. Fuller  
Class of 1978: Dr. Schneider  
Class of 1979: Dr. Slakey  
Class of 1980: Dr. Fischer

The field of modern biochemistry has undergone an explosive development in the last ten years. Our increased understanding of the principles of energy transfer in cells, the mechanism of regulation of metabolism, the importance of the structure and function of cellular and subcellular membranes, the structure and activities of macromolecules and our new knowledge of the chemical and

molecular basis of genetics has transformed all biology. The Department of Biochemistry has as an identifiable central theme — the structure, function, regulation and reproduction of molecules, organelles, cells and organisms.

The Department of Biochemistry has undergone recent enlargement and development which represents the modern approach to the subject. The Department serves both a service function to other health and environmental and natural resource units on the campus as well as a source for the training of specialists in the area of molecular and cellular sciences. In addition, the major does and will continue to be an important training ground for pre-med, pre-vet, and all pre-health science professions. For the future, the field of biochemistry is just beginning to make important incursions and have meaningful impact on the environmental and marine sciences. For the scientist just starting his career, biochemistry may indeed provide both the background and new, meaningful approaches for research aimed towards solving a wide variety of problems in health and environmental sciences. For the professional, biochemistry and biochemists will continue to produce discoveries and existing breakthroughs in science and medicine.

The area of molecular and cellular biology are dependent on and interact with chemistry, mathematics and physics. Therefore an early exposure and thorough grounding in these hard sciences is necessary. It is essential that a student who is even a potential major take a year of chemistry and calculus in the freshman year. A year of exposure to the basic biological sciences is also strongly recommended either from high school or in the freshman year. A sample curriculum is outlined below.

#### Freshman Year

MATH 127-128 or 135-136 or 131-132  
CHEM 113-114 or 111-112  
ZOO 190 or BOTANY 100 (if exempt, select from ZOO 221, 227 or 240, or from an approved advanced Botany course)  
Language (if exempt, a C or D core)  
Rhetoric (if exempt, a C or D core)

#### Sophomore Year

MATH 255  
Zoology, Botany or Microbiology  
CHEM 165, 166, 167, 168 or 261, 262, 263, 264



Language or C or D core  
PHYSIC 141-142

#### Junior Year

CHEM 210 or 127

CHEM 281-282

BIOCHM 223-224-226 (advanced section)

C or D core

Electives (may include BIOCHM 385-386)

#### Senior Year

Advanced Biochemistry or Advanced

Life-science or Advanced Chemistry

BIOCHM 388

BIOCHM 385-386 or 398-399

COINS 122 or 101

Electives (or core requirements)

### Botany

A major function of the Department of Botany is to provide programs that assure a thorough grounding in botany and related fields to undergraduate majors who plan either post-graduate studies in botany, or who seek certification to qualify for teaching biology at the secondary school level. Another function is to provide a program of contemporary courses for the non-science oriented undergraduate student.

Majors who plan to take post-graduate work in botany are assured excellent training in all fields of botany, including anatomy, cytology, ecology, genetics, morphology, taxonomy and physiology. In addition the undergraduate program includes University and College core requirements in languages, humanities, and the social sciences. This breadth of training, together with in-depth training in the sciences, equips students for the most demanding graduate programs.

It should be noted that this program in botany is equally valuable for students in other disciplines such as Plant and Soil Sciences, Forestry and Wildlife Management, Environmental Design, etc.

Students planning to teach biology at the secondary level are offered a program that provides broad training in biology as well as in closely allied sciences, and in the psychology and education programs required for teacher certification. A modification of this curriculum, e.g., without the psychology and education programs, could provide a broad liberal arts program, with emphasis in biology, for those students interested in, but not planning a career in biology.

The department offers several courses without prerequisite which are designed for non-science majors. These courses, including General Botany (101), Natural History of Man, Plants and Environment, and Genetics and Evolution, provide a broad yet relatively detailed approach to biological principles, and each can be used to satisfy a University core science requirement.

Students planning for the botany major with subsequent graduate training in the field are required to take the following courses:

Botany: Introductory Botany, plus 24 additional credits in botany, including at least two courses from each of the following areas: I. Ecology — Evolution, II. Physiology — Cytology — Genetics, and III. Anatomy — Morphology — Systematics.

Chemistry: General Chemistry (111-112) and at least one semester of organic chemistry, and one semester of Biochemistry of Plant Metabolism BOTANY (212).

Mathematics: Either two semesters of Calculus (127-128) or two of the following: Finite Math (112), Introductory to Statistics (231), or Introductory to Computer Science (122).

Physics: Two semesters, either 141-142 or 121-122.

Genetics: Either BOTANY 240 or ZOOL 240.

The program for students seeking qualification for teaching at the secondary level must meet the following requirements:

Botany: Introductory Botany (100 or 101), the Plant Kingdom (125), Principles of Evolution (228), plus a minimum of 15 additional credits in botany including at least one course from each of the areas: I. Ecology — Evolution, II. Physiology — Cytology — Genetics, or III. Anatomy — Morphology — Systematics.

Zoology: Vertebrate Physiology (135).

Genetics: Either BOTANY 240 or ZOOL 240.

Chemistry: General Chemistry (111 - 112) plus one additional course in either Chemistry or Biochemistry.

Mathematics: Two semesters of Calculus (127-128) or two of the following: Finite Math (112), Introductory to Statistics (231) or Introductory to Computer Science (122).

Physics: Two semesters, either 141-142, or 121-122.

Additional requirements for teacher

certification include elementary Psychology (101) and either Educational Psychology (301) or Adolescent Psychology (263), and the required course work and practice teaching in Education.

### Chemistry

The Department of Chemistry offers two major curricula: The B.S. (with accreditation to the American Chemical Society) and the B.A. These curricula have been considerably revised, effective for the class of 1978. The principal change permits greater option in the selection of upper level courses. Students graduating prior to 1978 may elect to qualify under the revised curricula, or the curricula in effect at the time they started in the program.

The B.S. program is designed for students who wish to prepare for graduate study, or for research and/or development work in chemical laboratories. A slightly modified program permits preparation for secondary school teaching. The B.A. program provides for students who wish to combine chemistry with another major area, as business for technical sales or management, or education for teaching, or pre-professional (medical, dental). Either program, with appropriate related courses, prepares a student for graduate study in environmental science, food science, material science, oceanography, etc.

During the first three years of the B.S. curriculum, the student completes chemistry core which includes CHEM 113, 114 (Principles of Chemistry); CHEM 165, 166, 167, 168 (Organic Chemistry with laboratory); CHEM 241 (Inorganic); CHEM 285, 286 (Physical); CHEM 210 (Analytical); CHEM 287 (Physical Lab); MATH 131, 132, 165 (Calculus); and PHYSIC 161, 162, 163 (a Calculus approach to Physics). It is recommended that German, Russian, or Japanese be selected to satisfy the College's language requirement, and that the student elect at least one course in other sciences and in computer science. The upper level chemistry requirement is three lecture courses, representing two of three designated groupings, and four laboratory courses, representing both of two designated groupings.

The B.A. program includes a core of CHEM 113, 114, 165, 166, 167, 168, 210, 241, 281, 282 (281, 282 are Physical Chemistry); MATH 131, 132; PHYSIC 141, 142;

Two upper level chemistry lecture courses and one laboratory course complete the requirement.

A number of options and permitted substitutions are noted in a detailed description of the B.S. and B.A. curricula. It is extremely important that the student get initial and continuing advice from a chemistry faculty member.

Professor Richason is the departmental chief adviser.

### **Computer & Information Science**

The Department of Computer & Information Science offers a wide range of undergraduate courses in the areas of computer Systems, Theory of Computation, and Cybernetics.

An increasing number of undergraduates, irrespective of their major, are finding it useful to have the ability to program and use modern computing equipment. They will find three courses (Introduction to Problem Solving Using the Computer; Assembly Language Programming; Comparative Programming languages) very useful in getting experience with the time-sharing system at the University and mastering many available languages.

A number of courses introduce undergraduates to the design of computers, the design of compilers for communicating with computers in high level languages, and to new techniques for reducing complex problems to computer form.

Courses in automata theory, recursive functions, complexity of computation, and related topics introduce the student with a mathematical background to the many exciting problems posed by the theoretical study of computation.

Students from all schools of the University have expressed interest in the program in cybernetics. Of particular note are the courses "Foundations of Cybernetics" which introduces the student to the computational study of artificial intelligence and brain function and to the design of robots; "Artificial Intelligence" which surveys robotics, scene analysis, theorem-proving and planning, and language understanding by robots; and "Computational Population Dynamics" which shows how mathematical techniques may combine with computer simulation to allow man to tackle large-scale problems of ecological interactions. Other courses develop research on vision

and memory from both a neurophysiological and robotic viewpoint; explore the design of question-answering systems, etc.

Non-technical majors who desire a comprehensive insight into the uses and abilities of computers, and who desire a more practical "hands-on" laboratory approach to their learning experiences, should be interested in "Elements of Computers: Art and Science." In addition, the course "Computers and Society" helps students who want to understand the use of computers to solve social problems, and of the studies required to avoid "side effects" — including such problems as data banks, computerized voting, automated health care, and computer-aided instruction.

While no formal undergraduate major exists in Computer & Information Science, one is currently being planned. Meanwhile, it is possible for students to seek a Bachelor's Degree with Individual Concentration, the program being worked out in consultation with the COINS Director of Undergraduate Studies.

### **Geology & Geography GEOGRAPHY**

The program in geography, with its emphasis on concepts and practical skills and techniques, provides a sound preparation for majors who seek employment upon graduation as well as for majors who proceed to graduate study. For students specializing in geography there is a wide variety of possible careers at all levels in planning, industry, and government agencies.

The faculty is prepared to discuss a program of courses in geography and related fields which best fits the career intentions and interests of the individual students. Thirty credit hours in geography are required and include two introductory courses (145 and 155), two skills and techniques courses (240 and 250), four upper division courses (200-399), and two seminars (396 and 397). In addition, the student is required to take five courses in other fields that supplement the student's interests and emphasis within the framework of the geography major. The courses are determined by the student and his or her adviser.

Prof. Terence Burke is the chief adviser for Geography.

### **GEOLOGY**

Students considering Geology as a major will find a variety of undergraduate programs available. These are contained within three degree options: the B.A. degree, the B.S. degree, Geology Option, and the B.S. degree, Earth Science Option.

The B.A. degree is the most flexible, and may be used by a student to develop an individualized program. It is particularly suited for those interested in Geology but not planning a professional career in the field.

The B.S. degree, Geology Option, provides a strong background for those wishing professional careers in Geology. The program consists largely of required courses in Geology and supporting sciences that prepare students for graduate school or immediate employment. It should be noted, however, that employment as a professional geologist generally requires some graduate training.

The B.S. degree, Earth Science Option, is recommended for students interested in secondary teaching, or for students interested in future graduate work leading to the M.A.T. or M.S. Ed. degrees. As well as the necessary core Geology courses, this program involves extensive course work in other sciences needed to teach secondary Earth Science and General Science courses.

The specific requirements in Geology and supporting subjects for each degree program may be obtained from the Department of Geology and Geography, or from the College of Arts and Sciences Information and Counseling Center (CASIAC). Thomas E. Rice is the Chief Adviser for Geology. Students are expected to discuss their career plans with a faculty adviser before selecting or changing their degree programs. It is also recommended that students discuss their course elections with a faculty adviser prior to registering each semester.

### **Mathematics & Statistics MATHEMATICS**

The student electing mathematics as a major will find a variety of stimulating program options. These include preparation for a career in teaching at the secondary school level, graduate and research work in mathematics, computer programming and data processing, actuarial work, statistics, or an industrial position. Mathematics is also a good



general major for students who are uncertain of their career plans. In addition, there are many opportunities for interdisciplinary study based on mathematics. Both Bachelor of Arts and Bachelor of Science degrees are offered, and the choice between them is usually based upon the interests and intentions of the student.

All mathematics majors are required to complete a two-year sequence in calculus and linear algebra, or the equivalent. In addition, eight upper-division courses are required. These may be chosen from the department's offerings or from certain mathematics-related courses in other departments. Five of these upper-division courses must be taken in the form of 2 two-semester sequences in two of the areas of algebra, analysis, applied mathematics, and geometry and topology, and a one semester elective from a third of these areas. Students who have taken calculus in high school may be entitled to advanced placement with credit for their previous work; they should consult the mathematics placement counselor during the summer counseling period. Further detailed information about mathematics major requirements may be found in the Mathematics Major's Information Leaflet which may be obtained from the department.

The student majoring in mathematics will have ample opportunity to shape his or her major program to fit his or her interests. If he or she is interested in computer and data processing he or she would probably take courses in computer and information science, logic, linear programming and possibly probability and statistics. The student aiming for a teaching career at the secondary level might elect courses in geometry and number theory, and then spend one semester of his or her senior year practicing teaching in a public secondary school. A student interested in actuarial work would take courses in analysis and probability and statistics and also computer science. The student interested in industrial work would do well to take advantage of the department's offerings in analysis and applied mathematics.

Students interested in statistics will find a good basic preparation in the mathematics department's course offerings, and will have an opportunity to take statistics courses for credit toward a major in mathematics.

Those planning on college level teaching or research in mathematics should be thinking of graduate school and are urged to take a number of the "pure" mathematics courses such as group theory, topology, differential geometry, and set theory.

Students who have demonstrated unusual mathematical ability in either the regular or honors courses in calculus will be invited to enter the departmental honors program. To receive a degree with an honors designation above cum laude a student must in fact meet the requirements of the honors program. One of these is that either a graduate course be taken or a senior honors thesis be written. Thus, in addition to taking some more demanding undergraduate courses the honors student will have the opportunity either to see mathematics at the graduate level or to undertake a substantial independent study project.

Every student majoring in mathematics is assigned a faculty adviser. Further opportunities to meet with faculty members on an informal basis are provided by various department-sponsored activities. In the past these have included a mathematics club for undergraduates, and a junior colloquium at which special lectures for undergraduates were given by faculty members. For those who enjoy mathematical competitions, the department has entered a team in the national Putnam Prize competition for the past several years.

#### PROBABILITY AND STATISTICS

The curriculum in probability and statistics is intended to develop student insight into the nature of scientific method, with emphasis upon statistical models of its chief tool, the experiment. Distinctions between deductive and inductive methods of reasoning are explored. Statistical techniques for dealing with data in small or large quantity are developed and studied. Courses offered introduce the student to analytic devices for dealing with data that are commonly used in the social, biological, and physical sciences; business, engineering and other disciplines.

Students with training in calculus should elect MATH 247-STATIS 248 or STATIS 315-316. Students without calculus who desire a thorough grounding in the concepts underlying statistics should

elect STATIS 231 and 232. Those who wish merely to obtain some familiarity with elementary statistical ideas and techniques should elect STATIS 121 and subsequently STATIS 251.

Any of the three courses STATIS 121, 231, or 315 serve as prerequisites for analysis of variance (STATIS 251), design of experiments (STATIS 261, STATIS 262), sampling theory (STATIS 271), and multivariate analysis (STATIS 281, STATIS 282).

There is at present no undergraduate major in statistics. Those who intend to study statistics at a graduate level should concentrate on mathematics and elect courses in computer science. Statistics finds useful application in diverse fields such as animal and plant breeding, econometrics, engineering, market research, health sciences, sociology and psychology. Advanced courses in statistics require a background of at least two years of calculus and preferably MATH 225, Advanced Calculus and MATH 211-212, Abstract Algebra.

The Statistical Laboratory is open to students and staff wishing to use its facilities. Students wishing to use the calculating machines will be instructed in their proper use.

#### Microbiology

The major program in microbiology offers sound preparation for more intensive graduate study and research in microbiology, as well as basic preparation for a wide variety of positions as microbiologists in research and non-research laboratories. In addition, the curriculum in microbiology provides a strong basis for those students who elect professional training in medical, dental or veterinary school. In either event microbiology majors should immediately begin preparation in chemistry. Microbiology majors are required to have broad training in collateral sciences, and minimum requirements include chemistry through quantitative analysis and organic, and one year each of introductory biological science, physics, and mathematics. Those students contemplating graduate study or professional school will be advised to emphasize stronger training in these collateral sciences. Courses in microbiology are designed to offer fundamental training in the basic core areas and disciplines of



his field. MICBIO 250, 251, 280, 340, senior seminar, and elective courses contributing to a total of at least 20 credits in microbiology are required of majors. Professor S. C. Holt is departmental chief adviser.

## Physics & Astronomy

**ASTRONOMY**  
The Five College Department of Astronomy is administered jointly with Amherst, Hampshire, Mount Holyoke, and Smith Colleges. The elementary courses for non-majors are taught separately at each campus but all advanced courses are given on a joint basis for students from the five participating institutions. Five College courses are identified in the *Undergraduate Catalog* by ASTFC. The Astronomy Program at the University is also a part of the Department of Physics and Astronomy. The graduate program in astronomy is developed in close cooperation with the program of physics.

The Five College Astronomy Department offers undergraduate courses which furnish 1) specialization for those students planning graduate study in astronomy, 2) a more general major for students interested in careers in teaching, scientific journalism, technical editing, or similar areas for which astronomy may form the basis for a suitably broad science background, and 3) a background for all students who are interested in astronomy for its cultural and scientific value. Professor J. Taylor is the Chief Adviser for Astronomy.

Students who plan to go to graduate school should obtain a firm foundation in physics and mathematics and should plan to finish satisfactorily the introductory physics and mathematics sequences and ASTRON 222-223 by the end of the sophomore year. During the junior and senior years students should complete Mechanics, Electricity and Magnetism, Modern Physics, MATH 242, and three courses selected from ASTRON 237, 238, 343, 344, and independent study. It is also strongly recommended that the student obtain a good reading knowledge of German, French or Russian.

More flexibility in planning courses is available to those majors for whom the B.A. or B.S. will be a terminal degree in astronomy. In some circumstances PHYSIC 142 and ASTRON 101-102 will be acceptable lower division courses. A

minimum of three upper division astronomy courses and nine additional credits of upper division astronomy or physics must be satisfactorily completed. These may include ASTRON 231 and 234 but should be chosen in consultation with the Chief Adviser. In some cases advanced courses in the history or the philosophy of science may be desirable.

Those students wishing a B.S. rather than a B.A. degree need a total of 60 credits of science courses. The credits required beyond those explicitly needed for the astronomy major may be chosen from any science or behavioral science courses.

Independent and honors work are encouraged for all majors. Opportunities for theoretical and observational work are available in cosmology, cosmogony, radio astronomy, planetary atmospheres, relativistic astrophysics, laboratory astrophysics, gravitational theory, infrared balloon astronomy, stellar astrophysics, spectroscopy, and exobiology. Facilities include the Laboratory for Infrared Astrophysics, balloon astronomy equipment (16-inch telescope, cryogenic detectors), the Five College Radio Observatory, access (under supervision) to the 120-foot NEROC radio antenna, and a modern 24-inch Cassegrain reflector. Opportunities for summer research are also frequently available including an exchange program with the Observatory of Bonn University. Original publications often result from undergraduate research.

## SAMPLE PROGRAM I

### Freshman Year

|          |            |
|----------|------------|
| Rhetoric | Rhetoric   |
| MATH 131 | MATH 132   |
| Elective | PHYSIC 161 |
| Elective | Elective   |
| Elective | Elective   |

### Sophomore Year

|            |            |
|------------|------------|
| PHYSIC 162 | PHYSIC 163 |
| MATH 165   | MATH 231   |
| Elective   | Elective   |
| ASTRON 222 | ASTRON 223 |
| Elective   | Elective   |

### Junior Year

|            |            |
|------------|------------|
| ASTRON 237 | ASTRON 234 |
| PHIL 230   | ASTRON 386 |
| PHYSIC 200 | Elective   |
| Elective   | Elective   |
| Elective   | Elective   |

Senior Year  
ASTRON 385  
PHYSIC 301  
MATH 200  
Ed. Psych.  
Elective

Ed. Block

## Sample Program II

### Freshman Year

|                  |                  |
|------------------|------------------|
| Rhetoric         | Rhetoric         |
| MATH 131         | MATH 132         |
| PHYSIC 171 (161) | PHYSIC 172 (162) |
| Elective         | Elective         |
| Elective         | Elective         |

### Sophomore Year

|                 |            |
|-----------------|------------|
| Elective        | Elective   |
| MATH 165        | MATH 231   |
| PHYSIC 173(163) | ASTRON 223 |
| ASTRON 222      | Elective   |
| Elective        | Elective   |

### Junior Year

|                           |                |
|---------------------------|----------------|
| Mechanics                 | Modern Physics |
| Electricity/<br>Magnetism | Thermodynamics |
| MATH 241                  | MATH 242       |
| Elective                  | ASTRON 238     |
| Elective                  | Elective       |

### Senior Year

|                             |                             |
|-----------------------------|-----------------------------|
| ASTRON 343                  | ASTRON 344                  |
| Elective                    | Elective                    |
| Elective                    | Elective                    |
| Physics/<br>Astron Elective | Physics/<br>Astron Elective |

Note: Electives include courses needed to satisfy college and University distribution requirements.

## PHYSICS

The Department of Physics & Astronomy offers programs of study and individual courses in physics for students in science and science-related areas and for liberal arts students.

For the liberal arts student a variety of one and two semester courses is available. PHYSIC 114 is of special interest to Communication Disorders majors, 115 to Music majors, and 130 to Elementary Education majors. PHYSIC 110, 116, 117, 118, 119 and 169 consider topics in the world beyond our senses, relativity, nuclear energy, quantum physics, contemporary applications of physics, and

science for science fiction readers respectively. PHYSIC 121-122 provides a broader view of the ideas and concepts of physics for the non-science student.

PHYSIC 141-142 serves the needs of life science majors, including pre-med/physics majors. 161-162-163 provides the necessary background for majors in Engineering, Chemistry, Physics, Astronomy, and other Physical Science fields. Students with special interest and facility in Physics and Mathematics, especially prospective Physics or Astronomy majors, should elect the 170 series, the Honors version of the 160 sequence. Prospective majors with high school math deficiencies may take 100 or 116 while completing the mathematics prerequisites for the introductory sequences. They are also urged to take 185, the freshman colloquium.

In order to provide the maximum flexibility and options, the department has recently revised all the upper division courses. This includes courses intended primarily for Physics majors and those which also appeal to students in other scientific fields. The new curriculum has not yet received final University approval. Consequently all courses numbered 171 or higher are tentative, although substantial changes are not expected. A variety of advanced and applied courses are included in this new curriculum.

Majors are normally required to take MATH 131, 132, 165 or 127, 128, 132, 165, a year of a science outside physics, and 18 credits of upper division physics courses. These are 220 (Physical Electronics) or 222 (Intermediate Electricity and Magnetism), 221 (Mechanics) or 225 (Biophysics), 223 (Thermal Physics), 224 (Modern Physics) or 301 (Applied Modern Physics I), and two advanced lab courses. The latter may be chosen from 205 (Intermediate Laboratory), 320 (Radiation Physics), 321-322 (Electronics for Scientists), 375-376 (Advanced Lab). (ASTRON 237 or 238 may be substituted for one of these labs). PHYSIC 201 (Intro. Applied Physics) and 202 (Techniques of Theoretical Physics) are recommended but not required. These requirements may be completed in as little as two years, but the breadth obtained by taking additional courses requires additional time.

The student interested in physics as a profession follows a program designed to provide a background in basic physics

which allows a continuation of studies in graduate school or permits immediate employment in a variety of technological fields. Such a student will normally elect several advanced physics courses plus math courses such as 241-242 (Applied Analysis), 231 or 331 (Differential Equations) and 167 (Linear Algebra).

Interdisciplinary work is a general category which includes preparation for science teaching in secondary schools, entrance to professional schools of law, medicine, biology, astronomy, computer science, engineering, or chemistry. Students interested in such fields will normally take physics courses in atmospheric physics, biophysics, radiation or instrumentation, or applied physics areas depending upon their needs. Since the major requirements are minimal, such students have ample time to take appropriate courses in the departments.

With the growing importance of nuclear medicine and the microscopic approach to biological systems, the pre-medical or pre-dental student can consider a physics major with a medical physics option. This includes the basic pre-medical core plus additional biophysics, radiation, and instrumentation courses which provide an excellent preparation for medical studies.

Students are encouraged to contact the department for further details concerning any of these programs and a leaflet giving sample programs and course descriptions. Professor M. M. Sternheim is the Director of Undergraduate Studies.

### Zoology

The Zoology Department offers a variety of general interest courses in ecology, behavior, natural history, genetics, and physiology. These are constructed for the enjoyment and benefit of everyone; a few are designed to fulfill the needs of specific groups of students.

For students who decide to major in zoology, the curriculum provides the basic concepts in all areas of zoology, but allows for various individual interests. Zoology majors should complete ZOOL 240, Principles of Genetics; ZOOL 360, Cell Physiology; and one course from each of the following groups:

Vertebrate zoology: ZOOL 221, Comparative Anatomy; ZOOL 223, Histology or ZOOL 227, Embryology.

Invertebrate zoology: ZOOL 281, Biology of the Invertebrates; ZOOL 282, Biol-

ogy of the Invertebrates or ZOOL 283, General Parasitology.

Ecology, Population, Behavior: ZOO 243, Population Biology; ZOOL 335, Limnology; ZOOL 337, Ecology or ZOOL 351, Animal Behavior.

Physiology, Development: ZOOL 361, Vertebrate Physiology; ZOOL 370, Comparative Physiology or ZOOL 380, Developmental Biology.

Background knowledge in allied fields aids understanding of zoological ideas; thus, additional requirements are BOTANY 100, Introductory Botany; PHYSIC 141/142, Introductory Physics; and MATH 127/128, Calculus for the Life and Social Sciences.

Students contemplating a major in zoology should also enroll in CHEM 111 during their first semester in order to anticipate those zoology courses which have general chemistry (CHEM 111/112), organic chemistry (CHEM 261/262 with laboratory), or biochemistry (BIOCHM 220 or 223) as prerequisites. No other scheduling difficulties should be encountered although the student should, of course, plan ahead with regard to all prerequisites, and fall-versus-spring scheduling of some courses.

Students may substitute for MATH 127/128 either of the following sequences: STATIS 231/232; Fundamentals of Statistical Inference; or COIN 122, Introduction to Problem Solving, plus a second COINS course for which 122 is a prerequisite. Other substitution are possible. For example, students with a strong interest in chemical biology may, with the permission of the Chemistry Department, substitute CHEM 113/114 for CHEM 111/112; those with special interest in physics may wish to substitute PHYSIC 161/162/163 for PHYSIC 141/142. The Bachelor of Science degree requires a total of 60 credits in natural science, mathematics, or psychology. A few courses elected for these areas will bring a zoology major program to the 60-credit level.

ZOOL 101, Introductory Zoology, is currently not required of zoology majors but the faculty is preparing a first course in zoology (ZOOL 102) for its major which will be required. Any student who has not studied biology in high school or who feels the need for review may, of



course elect ZOOL 101, or simply audit the lectures.

The curriculum for those who plan to become certified secondary school biology teachers is somewhat broader. Additional botany courses (BOTANY 125 and 26), and several psychology and education courses, as well as practice teaching, provide the needed background. Also ZOOL 135, Introductory Physiology, may be substituted for the last group of zoology courses listed above. Students are urged to contact the Science Education Adviser in the School of Education as early in their academic careers as possible since good course planning will expedite their very full programs. Written application to the teacher preparation program is required for student teaching placement.

The zoology faculty stands ready to assist the student in a variety of ways. Up-to-date information on course selection, the honors program for qualified students, special courses, individualized work (ZOOL 385/386), Senior Honors (ZOOL 398/399), and summer research opportunities is readily available from your adviser or other members of the faculty. It is useful to establish rapport with your adviser, and to seek as much information as possible about careers in zoology. Publications of the University and the College of Arts and Sciences Information and Advising Office (IASIAC) also provide information on procedures to ease your progress and on the vast array of courses to enrich your undergraduate education.

## ACULTY OF SOCIAL AND BEHAVIORAL SCIENCES

### Anthropology

In its study of mankind in terms of origins, ways of life, physical and cultural differentiation, and contemporary problems, anthropology bridges the social and biological sciences. Its courses are offered with the aim of providing both a foundation for specialized graduate study in all four subfields of anthropology (archaeology, physical anthropology, social and cultural anthropology and linguistic anthropology) and also the understanding of mankind that can be of value to anyone regardless of particular interests.

Anthropology majors must take ANTH 104 and one other of the following

introductory courses: 102, 103 or 105. They should also take at least one other course in the social and behavioral sciences (either Sociology, Economics, Political Science or Psychology). All majors must elect a minimum of 30 credits in Anthropology, with at least 21 of these credits chosen from courses above the 100 level. The maximum acceptable credits in Anthropology is 45. Students choosing Anthropology as a major beginning in the Fall Semester of 1975 are also required to take a course in quantitative methods selected from a list available from the department. Under special circumstances, and with the adviser's approval, an Anthropology major may be allowed to substitute as part of the departmental requirements non-duplicating Anthropology courses given at another of the Five-College Cooperative institutions. Professor Donald Proulx is chief adviser for Anthropology.

### Communication Studies

Courses in Communication Studies are designed to enrich the students' understanding of man through theoretical study of the communication process and the application of this theory to various communication forms. A major in Communication Studies prepares a student not only for a career in one of the communication disciplines, but also for a career in law, government, the arts, or business.

Majors are required to select one of the following areas of concentration: 1) Interpersonal Communication and Rhetoric, recommended for students who plan to work as communication specialists in business, government or education, who wish to pursue careers in law, public affairs, politics and similar professions, or to prepare themselves for graduate study in Interpersonal Communication and Rhetoric; 2) Mass Communications, recommended for students who plan to pursue careers in mass media or mass media-related industries, or to prepare themselves for graduate study in Mass Communications; 3) Communication Education, required of all students who plan to earn a secondary school teacher's certificate in Speech Communication.

Majors must meet the requirements of the area of major concentration. Specific information may be secured in the departmental office.

### Economics

Economics is the study of a hard fact of life, that what we as a society would like to have exceeds the capacity of our resources to provide it. We are forced, therefore, to choose—and simultaneously exclude—those goods and services we will have from the larger menu of possibilities. Economics develops the basic principles stemming from this scarcity and applies them to analyze the various aspects of human activity where such choices must be made.

The Economics Department at the University offers courses spanning a broad range of interests within economics. The courses are subject to continuous review as the findings and techniques of economic science improve. In recent years substantial numbers of new courses have been added and many existing courses revised. Special seminars on current problems are offered from time to time.

Courses are offered in such topics as economic theory, international trade, industrial structure and regulation, labor economics and human capital, mathematical economics, economic history, lesser developed economies, comparative systems, regional and urban economics, public finance and history of economic thought.

Thus the individual student is faced with a choice. The department has far more course offerings than even a major could reasonably take. A student who wishes a basic understanding of economics or completion of a (D) distribution requirement will probably take ECON 100, Elements of Economics. A student interested in a particular topic may take ECON 121, International Trade; ECON 131, Insecurity and Poverty; ECON 141, Labor Problems; ECON 172, The Soviet Economy; or ECON 181, Urban Problems; all of which presume no previous economics courses. A student expecting to take more than one economics course should begin with ECON 103, Microeconomics and continue with ECON 104, Macroeconomics. Then, if a particular subject is of interest, the student may enroll in the appropriate one from among the many other courses offered by the department. A student interested in developing economic tools of analysis further for a career in business or systems analysis, for example, can take ECON 203 and 204 after the two introductory courses.



The same freedom of choice extends to majors in economics. Graduates of the undergraduate program in economics continue in a wide variety of categories such as graduate school, law school, government, or business. The course structure is such that they are able to structure their program to their specific needs.

Along with University and college requirements the department requires majors to complete 24 credits in economics which must include 103, 104, 203, 204, and at least four other courses of the 200 or above level. The only other requirement is one of calculus such as 127, 131, or 135, or 190-290 so that students have some familiarity with the language in which so much of modern economics is conducted. Majors are assigned to a permanent adviser when they enter the department but are not required to obtain the adviser's signature on semester programs. In practice many economics majors follow an informal advising system of consulting faculty members from whom they have had courses or who are well versed in specific areas.

### Political Science

Courses in Political Science investigate the nature, functions, and problems of political systems, and of the place of politics in the modern world. These courses can be broadly grouped into the fields of Political Theory, American Politics and Public Law, State and Local Politics and Public Administration, Comparative Politics and Area Studies, and International Relations.

The degree program in Political Science provides a thorough foundation for enlightened citizenship and prepares students for a wide range of careers, such as graduate study leading to academic or research positions, public service at the federal, state or local level, political office, the study and practice of law, foreign service, business and education.

The Political Science Department offers three introductory courses: 101 American Politics; 131 Comparative Politics; and 151 World Politics. Any of these courses meets the University requirement of an introductory course in social science. Political Science majors are required to take two of the above three courses, the two selected depending upon the background, interest, and experience of the student involved.

Credit will not be awarded for more than six hours of introductory work.

Majors in Political Science are normally expected to complete the basic courses in their freshman or sophomore years. A minimum of nine additional courses is required. At least one course must be selected from each of the five fields: political theory, American politics and public law, state and local politics and public administration, comparative politics and area studies, and international relations. Any four additional Political Science courses will complete the Departmental distribution.

The curriculum is flexible enough to accommodate a wide range of career and vocational interests. Students are encouraged to develop their individual programs in consultation with Departmental advisers. Opportunities also exist for independent research (through the Senior Honors Program), for exchange programs (within the Five College area, among a number of participating universities and colleges in the United States, and with a number of universities abroad), and for various internships and training programs at the local, state, and national levels.

### Psychology

The courses in the Psychology Department are planned to impart an understanding of the basic principles, methods and data of psychology as a science and the application of this knowledge to current issues. The Department recognizes that interest in psychology is not limited to those who intend to pursue careers in the discipline. Course offerings are therefore designed so as to permit students to pursue study of various aspects of the subject to differing levels of depth. The wide range of the discipline further permits students to pursue programs of study which lead to either the B.A. or the B.S. degree, depending on the pattern of courses the student elects.

Students interested in majoring in psychology should elect PSYCH 120, 130, 140, and 145 and may then pursue a general psychology major or one designed for those preparing for graduate study and professional careers in the field. The general psychology major provides opportunities either for those seeking a general education or for those entering career fields for which psychological information is relevant.

The psychology major must elect the following: a minimum of 24 (and no more than 40) credits of advanced level courses in the Department. Included the electives must be at least two courses from each of the following two groupings: A) 210, 220, 230, and 250; and B) 260, 270, and 280. This program allows the student considerable flexibility to elect a variety of courses both within and outside the Department suited to his or her interests and needs. Students completing this major will fulfill the Department requirements for the Bachelor of Arts or the Bachelor of Science degree.

In addition, students interested in a career in Psychology should plan to elect at least one laboratory course from each of the following two groupings: A) 221, 222, 231, and 251; and B) 261, 271, 281, and 282. These laboratory electives must be taken in proper sequence with the associated non-laboratory prerequisite or corequisites. While such laboratory electives are highly recommended for students intending to apply to graduate school, they also may be of use and interest to other majors. Furthermore, students who have not taken these courses have not excluded themselves from further study or careers in the field. Students completing this major will fulfill the Departmental requirements for either the Bachelor of Arts or the Bachelor of Science degree.

NOTE: Psychology majors may elect either a B.A. or B.S. degree. If a student elects the B.S. degree, he must fulfill the additional science requirements of the College. Depending on their backgrounds, certain transfer students may have difficulty fulfilling these requirements in the time they have available. Students who are in doubt as to which degree program to follow should discuss the available options with the Undergraduate Advising Office in Tobin Hall.

Eligible students (either B.A. or B.S.) will be encouraged to participate in the honors program in their junior and senior years. Furthermore, selected majors may from time to time be invited to participate in Special Problem programs, the Department's cooperative teaching program or both.

Professor Stanley Moss is Director of Undergraduate Studies. Students should contact the Undergraduate Secretary in Tobin Hall for advising.

## **Sociology**

The courses in sociology are planned to give the student an understanding of the factors which influence the individual in his or her activities and interests as a member of society and to introduce the fundamental methods of research in sociology. The course offerings are designed so that students who desire to prepare for graduate work, as well as those who do not, will find suitable programs for study available within the department.

Career opportunities are open in a wide range of fields which include public and private welfare agencies, governmental and private research organizations, and education. Those interested in research careers should incorporate within their programs courses in statistics and methodology beyond the introductory levels and should plan on graduate training if they aspire to full professional status in the discipline. The American Association of Schools of Social Work indicates that the pre-professional subjects most closely related to professional work in that field are economics, political science, psychology and sociology.

Rather than offer a single introductory course in sociology, the department offers a number of introductory courses at the 100-level, each of which has a particular substantive referent but the shared responsibility of acquainting the student with the general principles and methods of the discipline. These courses include: a) Contemporary American Society; b) Age, Sex, and Kinship in Contemporary Society; c) Social Problems; d) Drugs and Society; e) Sociology of Learning; Problems of Personal and Social Change; f) Urban Life and Industrial Society; g) Race, Sex and Social Class: Inequality in America; and h) Self, Society, and Interpersonal Relations.

The sociology major requires a minimum of 27 credits or nine courses distributed as indicated below. No major is permitted to take more than a total of 36 credits or 12 courses in sociology.

Each major is required to take both SOCIOL 201 (Sociological Analysis I: Theories and Perspectives) and SOCIOL 202 (Sociological Analysis II: Data Collection and Analysis). These courses should be taken during the sophomore year as further preparation for the upper division courses to follow. At least one sociology course, preferably at the

100-level, is a prerequisite for 201 and 202.

In addition to 201-202, each major is required to take at least one upper division course in three of the following five core areas, and no more than three courses can be taken for credit toward the major in any one core area. Core areas include: Social Organization and Institutions; Social Issues and Policies; Demography and Urban Sociology; Social Psychology; and Theory and Methods.

It is recommended that majors with special interest in a core area take a 300-level practicum in the area during their senior year.

Professor Robert Faulkner is the departmental chief adviser. Mr. William D. Bathurst is information officer for sociology majors.

## **INTERDISCIPLINARY PROGRAMS**

### **Classics & Philosophy**

The Classics & Philosophy major is administered jointly by the two departments. It is designed for classicists with a philosophical bent and philosophers with an interest in Greek.

### **REQUIREMENTS**

8 hours of credit in Elementary and Intermediate Greek

6 hours of credit in Greek Readings

6 hours of credit in Classics

6 hours of credit in Philosophy

6 hours of credit in Ancient Philosophy

6 hours of credit in Special Classics and Philosophy seminars taken in the junior and senior years.

Questions may be directed to Prof. Gareth Matthews, Philosophy Department; and to Prof. Robert Dyer and Prof. John Marry, Classics Department.

### **Judaic Studies**

Judaic Studies is a major program supervised by a committee of faculty members from various departments. The Director of Judaic Studies and chairman of the committee is Professor Leonard H. Ehrlich. Student inquiries about any academic aspect of the program, such as the major, individual courses, or study abroad, may be directed to him or to the Director of Student Affairs, Professor Leora Baron.

Students who want to major in Judaic Studies must complete the following requirements:

- a) Hebrew: One year introductory and one year intermediate Hebrew, or equivalent. Two semesters of Hebrew courses numbered 150 or above, or equivalent.
- b) JUDAIC 100, 101 (The Jewish People, I and II).
- c) 18 hours in courses, approved by the Judaic Studies Committee, numbered 200 or above. This requirement is in addition to (a) above.
- d) The major student will devote no fewer than 9 of these 18 hours to an area of concentration approved by the Judaic Studies Committee. Six approved areas are: Biblical Studies, History, Hebrew Language and Literature, Modern Literature, Religion, Area Study. Students concentrating in any one of these areas will be assigned to an appropriate adviser. Students wishing to concentrate in an area not listed here should prepare, in consultation with one of the advisers, a proposal for the Committee's consideration.

Entering freshmen who may decide to take a major in Judaic Studies are strongly advised to enroll in Hebrew in the freshman year. This will leave them ample time to complete the required three years of Hebrew; it will also prepare them for a year's study in Israel, which is not required but desirable. In case such students decide not to take a major in Judaic Studies, two years of Hebrew will satisfy the language requirement of the College of Arts and Sciences.

### **Latin American Studies**

Undergraduates interested in Latin America may wish to enroll in the University's Latin American Studies Program. The program does not constitute a major and is designed to supplement the work done in another discipline. However, those students who fulfill the requirements of the program are awarded the Certificate in Latin American Studies attesting to their attainment in area and language studies. The requirements of the program are intended to be met partly through courses that fulfill existing requirements of the College of Arts and Sciences,



partly through the careful use of electives.

Requirements for the Certificate in Latin American Studies:

#### TRACK A

##### 1) Languages

- a) Students must demonstrate a practical working knowledge, defined as the ability to engage in ordinary conversations and to read mature but non-technical material, of Spanish or Portuguese. This knowledge may be demonstrated by examination or by satisfactory performance (with a grade of C or better) in SPAN 180-181 or PORT 181-182 for conversation and SPAN 140 or PORT 140 for reading.

- b) Completion of a one-year course in the other language (Spanish or Portuguese) with a grade of at least C. This requirement may be met by an achievement test.

##### 2) Area Studies

Successful completion (with a grade of C or better) of four courses in Latin American Studies selected from three distinct disciplines, chosen from the following list:

ANTH 237, 375, 376

ECON 267

EDUC 365

GEOG 220

POL.SCI 240, 241, 245

HIST 120, 121, 301, 302, 303, 304, 305, 306, 307, 308

SPAN 201, 350, 351, 352, 353, 355, 356, 357  
Appropriate courses listed in the Five College announcement of Latin American Studies may also be used to fulfill this requirement.

##### 3) Inter-disciplinary Courses

All students must take the Seminar on Latin America (LAT AM 390). This is normally taken in the second semester of the senior year. As an optional course they may also want to take LAT AM 392—Bibliography for Latin American Studies.

#### TRACK B

##### 1) Languages

Students must demonstrate a practical working knowledge of Spanish or Portuguese. For details see above under Track A, 1a.

##### 2) Area Studies

Successful completion of five courses in Latin American Studies selected from at

least three distinct disciplines. See above under Track A, 2 for list.

##### 3) Interdisciplinary Courses

Students must complete both LAT AM 392, Bibliography for Latin American Studies, and LAT AM 390, Seminar on Latin America.

The Committee on Latin American Studies administers the program and advises interested students. Committee members for 1974-75 are:

Professor Robert A. Potash, Chairman (History)

Professor Howard A. Wiarda (Political Science)

Professor Robert Bancroft (Spanish and Portuguese)

Associate Professor Donald A. Proulx (Anthropology)

Associate Professor Richard W. Wilkie (Geography)

Associate Professor Michael Best (Economics)

#### INTERDISCIPLINARY MAJORS IN LINGUISTICS

The Department of Linguistics offers five majors in which the study of Linguistics forms a significant part of the curricular requirements. These are:

Linguistics & Philosophy

Linguistics & Chinese

Linguistics & German

Linguistics & Japanese

Linguistics & Russian

Students interested in these majors should first see the undergraduate adviser in Linguistics. Students wishing to pursue a joint major in Linguistics and other disciplines (for example, Linguistics & English, Linguistics & Psychology, Linguistics & Anthropology, or Linguistics & Computer Science) should also see the undergraduate adviser in Linguistics. Joint majors in these fields have in the past been approved through the Bachelor's Degree with Individual Concentration.

Questions may be directed to Prof. Donald Freeman, Linguistics Department.

#### Linguistics & Philosophy

**Prerequisites:** Two years (or equivalent) of a foreign language to be taken before the junior year, plus 42 semester hours of credit distributed between philosophy and linguistics, and including each of the above or equivalent. At the discretion of the directors of undergraduate studies in each department, other senior level

courses in linguistics and philosophy may be substituted for those listed above. Seniors normally will take the cross-listed seminar LING (and PHIL) 395 Linguistics & Philosophy.

LING 201, Introduction to Linguistic Theory (3)

LING 202, Phonological Theory (3)

LING 203, Introduction to Syntax (3)

LING 209, Formal Foundations of Linguistic Theory (3)

LING 210, Introduction to Semantics (3)

LING 211, Introduction to Psycholinguistics (3)

PHIL 230, Intermediate Logic (3)

One of the following:

PHIL 371, Philosophy and Logic (3)

PHIL 372, Mathematical Logic (3)

One of the following:

PHIL 240, Philosophical Approach to Science (3)

PHIL 340, Philosophy of Science (3)

PHIL 261, Contemporary Analytic Philosophy (3)

PHIL 346, Philosophy of Language (3)

One of the following:

PHIL 344, Epistemology (3)

PHIL 345, Metaphysics (3)

#### Linguistics & Chinese

**Prerequisites:** Successful completion of four (4) semester courses in Chinese (2 credits): CHINSE 126, 146, 226, 227 (or equivalent). Thirty-five (35) credits distributed between Linguistics and Asian Studies and normally including the following:

LING 201, Introduction to Linguistic Theory (3)

LING 202, Phonological theory (3)

LING 203, Introductory Syntax (3)

One of the following:

LING 204, Field Methods (3)

LING 211, Introduction to Psycholinguistics (3)

LING 214, Phonetics for Linguists (1)

CHINSE 275, Chinese Syntax (3)

CHINSE 350, Classical Chinese I (4)

CHINSE 375, History of Chinese (3)

One of the following:

CHINSE 351, Classical Chinese II (3)

CHINSE 391, Chinese Dialectology (3)

Other courses may be selected from the course list of the Five College Asian Studies program. All seniors normal will take the cross-listed seminar 395 Linguistics and Language.



### **Linguistics & German**

**Prerequisites:** Successful completion of four (4) semester courses in German (12 credits): 110, 120, 130, 140, or equivalent. Thirty (30) credits distributed between linguistics and German such that at least 4 credits are earned in courses bearing German numbers over 200, and normally including the following:

- LING 201, Introduction to Linguistic Theory (3)
- LING 202, Phonological Theory (3)
- LING 203, Introduction to Syntax (3)
- LING 211, Introductory Psycholinguistics (3)
- LING 214, Phonetics for Linguists. (1)
- GERMAN 201, Advanced German (4), and GERMAN 202, Advanced German (4)
- GERMAN 211, Advanced Composition (3)

One of the following:

- GERMAN 284, The German Language (3)
- GERMAN 285, The Structure of German (3)

Students will be encouraged to take graduate courses in the older Germanic languages for undergraduate credit (e.g. GERMAN 701, 702, 703, 704, 710, 711, 712) and may also opt to take courses in German literature or civilization courses and/or language courses in Danish, Dutch, Swedish. All seniors normally will take the cross-listed seminar 395C: Linguistics and Language.

### **Linguistics & Japanese**

**Prerequisites:** Successful completion of four (4) semester courses in Japanese (24 credits): JAPAN 126, 146, 226, 227 or equivalent. Thirty-five (35) credits distributed between Linguistics and Asian Studies, and normally including the following:

- LING 201, Introduction to Linguistic Theory (3)
- LING 202, Phonological Theory (3)
- LING 203, Introductory Syntax (3)

One of the following:

- LING 204, Field Methods (3)
- LING 211, Introduction to Psycholinguistics (3)

- JAPAN 275, Japanese Linguistics I (3)
- JAPAN 276, Japanese Linguistics II (3)
- JAPAN 376, Topics in Japanese Linguistics (3)

Six credits from the following:

LINGUISTICS & GERMAN / JAPANESE / RUSSIAN / MATHEMATICS & PHILOSOPHY / NEAR EASTERN STUDIES

JAPAN 326, Readings In Modern Japanese I (6)

JAPAN 327, Readings in Modern Japanese II (6)

Other courses may be selected from the course list of the Five College Asian Studies program. All seniors normally will take the cross-listed seminar 395C: Linguistics and Language.

### **Linguistics & Russian**

**Prerequisites:** Successful completion of four (4) semester courses in Russian: RUSS 110, 120, 130, 140 or equivalent. Thirty credits distributed between Linguistics and Slavic Languages, and including at least 18 credits earned in courses bearing Russian catalog numbers. The language courses taken as a prerequisite to the major may be counted towards these 18 credits, which are required for state certification, but not toward the major. Courses in the major normally will include the following:

- LING 201, Introduction to Linguistic Theory (3)
- LING 202, Phonological Theory (3)
- LING 203, Introductory Syntax (3)
- LING 211, Introduction to Psycholinguistics (3)
- LING 214, Introductory Phonetics for Linguists (1)
- RUSS 261, Advanced Russian (3)
- RUSS 262, Advanced Russian (3)
- RUSS 266, Russian Phonetics (3)
- RUSS 365, Structure of Russian (3)
- RUSS 366, Contrastive Structures of Russian and English (3)

Other courses may be selected from the offerings of the Slavic languages departments in the Five College area, including language courses in Polish, although Polish language courses cannot currently count toward state certification nor can they count toward the major since they have numbers below 200. All seniors normally will take the cross-listed seminar 395C: Linguistics and Language.

### **Mathematics & Philosophy**

**Requirements:** A minimum of 36 semester hours of credit in courses offered in the two departments. Satisfaction of the following requirements of distribution:

- (a) *The Mathematics Requirement.* Satisfactory completion of MATH 136, 167, and four other courses from among 165 (or 166), and courses numbered above 200,

including a two-semester sequence.

- (b) *The Philosophy Requirement.* Satisfactory completion of any three courses from among PHIL 161, 162, 201, 205, 230, and 261. Satisfactory completion of PHIL 374 and one other course numbered above 200.

COINS 285 may be taken in partial fulfillment of requirement (a) or requirement (b) (but not both).

- (c) *The Logic Requirement.* Satisfactory completion of MATH 381 or both of PHIL 372 and 373. (Note: These courses count toward satisfaction of requirements (a) and (b), respectively.)

For further information, see Prof. Michael Jubien, co-director of the program for Philosophy, or Prof. Frank Wattenberg, co-director for Mathematics.

### **Near Eastern Studies**

The University of Massachusetts, Amherst, offers an interdisciplinary and interdepartmental major in Near Eastern Studies. The major is administered by the following members of the Near Eastern Studies Committee, under the chairmanship of Professor Vartan Artinian of the Department of Classics (737 Herter Hall; telephone 545-0513):

- Leora Baron, Department of Classics, 529 Herter Hall, 545-0543
- Jack Benson, Department of Art, 323A Bartlett Hall, 545-2659
- David Biddle, Department of History, 707 Herter Hall, 545-0672
- Walter Denny, Department of Art, 229C Bartlett Hall, 545-2729
- Charles Isbell, Department of Classics, 540 Herter Hall, 545-0543
- George Kirk, Department of History, 617 Herter Hall, 545-0547
- Archibald Lewis, Department of History, 604 Herter Hall, 545-0630
- Leila Meo, Department of Political Science, 338 Thompson Hall, 545-0413
- Edward Phinney, Department of Classics, 533 Herter Hall, 545-0514
- Niki Stavrolakes, Department of Classics, 542 Herter Hall, 545-0542

Students majoring (or planning to major) in Near Eastern Studies may consult any of the above members of the Committee for help in arranging pro-

grams of study. Students in doubt as to which member of the Committee to choose as an adviser should contact Professor George Kirk, the chief adviser for Near Eastern Studies majors. The major consists of a minimum of 24 upper level credits in courses chosen from an approved list. The complete list is published by the Five College Coordinator and may be obtained from Professor Vartan Artinian. NEAST 100, 101 (Near Eastern Civilizations I and II), and 2 years or the equivalent of a Near Eastern language (Arabic, Armenian, Hebrew, Persian, Turkish) are required. Students should begin the major by taking NEAST 100 and a Near Eastern language course. Those wishing to concentrate in the area of ancient Near Eastern studies may arrange to study Akkadian, Aramaic, and Ugaritic with Professor Charles Isbell. Students are urged to spend a summer, a semester, or a full academic year in the Near East (please see Professor Vartan Artinian, David Biddle, George Kirk, or Leila Meo for available programs). Special Problems courses may be arranged in the area of the student's particular interest with any member of the Committee. Students are strongly urged to take advantage of the offerings at the neighboring Colleges listed below. Registration in these courses is a simple matter. Forms are available in the CASIAC, E22 Machmer. The Five College bus service offers convenient and free transportation. For class meeting times, consult the schedule material issued by the separate colleges.

#### **Pre-Dental, Pre-Medical, and Pre-Veterinary Programs**

A student planning to enter a dental, medical, optometry, podiatry, osteopathy, or veterinary school should select a major department in the field of greatest interest. This will usually be in the College of Arts and Sciences, but may be in other colleges or schools. Pre-veterinary students frequently select a major in the College of Food and Natural Resources. Preparation for the professional schools requires relatively few specific courses beyond those necessary to obtain the bachelor's degree and can be completed within the four-year curriculum of most departments in the University.

A liberal education is felt to be one of the best backgrounds for entering the medical, dental or other health fields. Although many students may be inclined

to concentrate in the sciences, this will not necessarily improve the opportunity for entrance into a professional school. Rather, the field of concentration should be determined by the student's strong secondary interests; i.e., he or she should choose that area most likely to lead to a satisfying alternative career.

Minimum preparation for the pre-professional student must include one year of inorganic, one year of organic, and one semester of analytical chemistry, three semesters of biology, one year of college mathematics, and one year of physics. Certain additional courses in biology, chemistry, or mathematics may be required or recommended by some dental, medical, and veterinary schools. Students should consult their advisers as well as professional school catalogs in regard to specific requirements of particular schools. Freshmen who intend to include the pre-professional courses in the curriculum should discuss their plans with the summer counseling adviser, as some change in the normal course sequence may be desirable.

Students, who by their work in the first year demonstrate a potential for success, may, in their third semester, apply to the Pre-Professional Advisory Committee for entrance into the pre-medical, pre-dental, or pre-veterinary major. This program is designed to give qualified students the opportunity to broaden their background by providing for increased flexibility in the curriculum of the last two years. These students will have advisers specifically for this program, will be interviewed, and, upon application to professional schools, will be given a written evaluation by the pre-professional advisory committee. However, admission into a pre-medical, pre-dental, or pre-veterinary program is not a prerequisite for application to the professional schools. Many students prefer to complete a full major in an academic department; these students should also apply for entrance into the pre-professional program, and they will be interviewed and evaluated by the committee in the same manner as those who are accepted as majors.

A library of dental, medical, optometry, osteopathy, podiatry, and veterinary school catalogs and other pertinent material is maintained in the committee office, Room 206 Goessmann. Students are encouraged to visit this office for further information concerning prepara-

tions for careers in dentistry, medicine, veterinary medicine and other health areas.

Individual members of the advisory committee are available for counsel to all interested students at any stage of their program and whether or not they have been accepted into the curriculum as majors. The committee membership for 1975-76 consists of 17 faculty members from Natural Sciences, Psychology, Health Sciences and Food and Natural Resources. Dr. W. Brian O'Connor, Associate Professor/Zoology is the Chairman of the Committee.

#### **Science Major**

This is an interdepartmental major based on courses in the departments of the Faculty of Natural Sciences and Mathematics (Biochemistry, Botany, Chemistry, Computer and Information Science, Geology, Mathematics / Statistics, Microbiology, Physics / Astronomy and Zoology). The major is coordinated and administered by a committee composed of the chief undergraduate advisors of these departments, a representative of the Pre-Med committee, and the assistant dean of NS&M (Natural Sciences & Mathematics). The major is intended for the student who has a broad interest in sciences but does not wish to specialize, and has requirements in the areas of foundational work, depth, and breadth.

In the foundations area the requirements are: (1) two courses from Math or COINS (Computer and Information Science) or Statistics; (2) two courses from each of Physics and Chemistry plus one more from Physics, Chemistry or Geology; and (3) two courses from the departments of Biochemistry, Botany, Microbiology, or Zoology.

The depth requirement consists of a primary concentration of at least six courses in one department and a secondary concentration of at least four courses in another department in NS&M, with the primary concentration including at least four upper division courses.

To complete the major, the breadth requirement calls for a total of 20 courses chosen from at least six of the nine NS&M departments.

Courses for non-science majors cannot be used to satisfy any part of the Science major, nor can courses taken on a pass/fail basis. Also, courses that are acceptable in the various areas of the



requirements depend partly on the primary concentration. For more detailed information contact CASIAC or any member of the coordinating committee.

### **Social Thought & Political Economy**

The Social Thought & Political Economy program is an interdisciplinary major for students who want a challenging major that combines related elements of the offerings of the following departments: Anthropology, Economics, History, Philosophy, Political Science, Psychology, and Sociology.

Students choose a concentration either in Social Thought or in Political Economy. Each student is assigned a faculty adviser in consultation with whom he/she selects a program of courses.

### **Requirements**

- (a) 12 hours of credit at the introductory level in at least three of the departments listed above;
- (b) 18 hours of credit in courses numbered 200 or above, selected in consultation with the adviser, from the offerings of the departments listed above;
- (c) 6 hours of credit in a two-semester senior year team-taught seminar restricted to the STPEC majors.

Majors with strong academic records are encouraged to write Senior Honors theses.

For more information, contact Karen Varren, in the Office For Interdisciplinary Studies, housed in CASIAC, Machmer Hall.

### **Soviet and East European Studies**

This program provides an opportunity to study the Soviet and East European area from the perspective of several academic disciplines. Requirements for a major are:

- 1) Proficiency in a relevant language (usually Russian) at a level adequate to enable the student to conduct research in that language;
- 2) Successful completion of 10 courses dealing with the area in a minimum of three disciplines to be chosen from Anthropology, Economics, History, Political Science, Slavic Languages and Literatures, and Sociology;
- 3) Two courses in modern European history.

The major in Soviet and East European Studies was established in 1971 as

an alternative to the major in Slavic Languages and Literatures and to a major in one of the several disciplines offering courses on the Soviet and East European area. This major program is designed for those students who want to acquire a knowledge of this large and important part of the world through study across disciplinary lines. It may be particularly useful for students contemplating work in teaching, government service, journalism and other fields.

Students interested in graduate study in the area may also find the major useful, although it should be noted that most graduate programs are in a single academic discipline only. Accordingly, a student contemplating work toward an advanced degree is advised to have at least a minor in the discipline in which he or she is most interested. (It is possible to take sufficient courses to fulfill the requirements for two majors, with this fact indicated upon the official transcript of the student. This type of program may be devised by an individual student to fit specific plans for graduate study.)

The Committee on Soviet and East European Studies administers the program. Members are: Zdenek Salzmänn (Anthropology); Paul Hollander (Sociology); Robert Jones (History); Maurice L. Levin (Slavic); Stanley Radosh (Slavic Bibliographer); Karl Ryavec (Political Science) and J. Joseph Lake, Chairman. Questions regarding the details of this program may be obtained from the Department of Slavic Languages and Literatures, Herter Hall 438, or from Professor Karl Ryavec, Department of Political Science, Thompson Hall.

### **Western European Area Studies**

The Western European Area Studies Program seeks to add scope and depth to the University's liberal arts program. It is not a major concentration, but rather an informal "minor" which complements a wide variety of departmental majors and offers students additional incentive and guidance in creating a meaningful interdisciplinary undergraduate experience.

The requirements for the Western European Studies (WEST) Certificate are: 1) a minimum of one upper-level course in each of three disciplines relating to Western Europe beyond the designated major; 2) at least one interdisciplinary seminar given under the auspices of the WEST program (WEST 291 or 391); 3) a working knowledge of one modern

Western European language (normally 18 credits) in addition to English (a reading knowledge of a second foreign language is recommended). These requirements may be met by courses taken at the University, at one of the four institutions in the Five College system, or in one of the overseas programs.

Courses may be chosen from the following areas and departments:

Humanities: Art, Music, History, Philosophy

Language and Literature: Comparative Literature, English, French and Italian; Germanic Languages (includes German, Dutch, Danish, and Swedish), Spanish and Portuguese

Professional Schools: Business Administration, Education

Social Science: Anthropology, Economics, Geography, Political Science, Sociology

Students should select their courses — and design their programs — in consultation with their departmental WEST advisor, who will insure that they meet the requirements for the certificate.

WEST Executive Committee, 1975-76: Eric Einhorn (Political Science), Director; Paul Mankin (French), and Marvin Swartz (History).



## School of Business Administration

The faculty of the School of Business Administration is keenly aware of the dynamic changes taking place in our economy, the extensive shifts in occupations and professions and the consequent need for intelligent and well-educated businessmen. The continuing advancement of technology, science, and the behavioral sciences has placed upon schools of Business Administration the necessity to probe, not only into the developments of its own areas of education, but also into the relationships that exist among other areas such as mathematics, economics, psychology, sociology, and government.

The School of Business Administration prepares students to take advantage of important economic opportunities and eventually to assume positions of responsibility in business. The school's educational program is directed toward the broad aspects of business, encouraging high standards of ethical conduct, broad social responsibilities, and the development of competence in particular courses of study of the student's own interest, aptitude, and choice.

The first two years emphasize general education by providing fundamental courses in the humanities, communication skills, mathematics, and the social sciences. In addition, basic courses in accounting, economics, computer science, and business law prepare the student for further work in the School of Business Administration. The junior and senior years emphasize a greater degree of specialization and provide for this in the programs indicated below. But even in these last two years all students need to view business as a whole in so far as a "core" of courses can do this. This "core" consists of introductory courses in Finance, Marketing, and Management. A total of at least 120 credits is required for graduation. Each course of study leads to a degree of Bachelor of Business Administration.

Students transferring to the School of Business Administration from any school or college within the University shall receive junior and senior elective credit only for those courses passed with a grade of C or better.

Students who intend to transfer from junior or community colleges should complete the program in liberal arts and not register for courses in Business Administration, except Principles of Economics and Elementary Accounting.

Transfer students who complete courses in their first two years that are offered in the junior or senior years will receive transfer credit only if such courses are accepted by the department concerned. An examination for such credit may be required.

The School of Business Administration is a member of the American Association of Collegiate Schools of Business.

| Freshman Year         |         |
|-----------------------|---------|
| First Semester        | Credits |
| RHET 100(C)           | 3       |
| MATH 120              | 3       |
| ECON 103              | 3       |
| Non-Business Elective | 3       |
| *Humanities Elective  | 3       |
|                       | 15      |
| Second Semester       | Credits |
| RHET 110(C)           | 3       |
| MATH 121              | 3       |
| ECON 104              | 3       |
| Non-Business Elective | 3       |
| Elective              | 3       |
|                       | 15      |

\*Any course identified by the letter (C) in the catalog.

### Accounting

Accounting is often referred to as "the language of business." Accounting is concerned with a wide range of activities, including the processes of recording, sorting, and summarizing data resulting from business transactions and events. It is also involved with the preparation of reports and interpretation of the data. Accounting has been broadly defined as: "... the process of identifying, measuring, and communicating economic information to permit informed judgements and decisions by users of the information."

The accountant is the individual who develops and maintains a system of components and methods which not only perform the data processing operations but precedes the external and internal reporting needs of an organization. As a member of the management team the accountant provides information to management for planning, controlling, and decision making.

Students majoring in accounting may concentrate their study in one of several different career areas. Students may, with the guidance of a faculty adviser, design their program to meet specific individual career goals. Programs of

study are possible for preparation for careers in:

- public accounting
- information systems
- management accounting and
- a general program which provide flexibility for students to meet specific individual career goals.

### General Business and Finance

The department offers five programs of study and other specifically designed programs for those students who wish to combine Business Administration with a related field of study outside the School of Business Administration. The program in Financial Management is designed for those students who want careers in the planning and controlling of financial organizations, developing decision models and developing computerized systems. The program in General Business emphasizes breadth of knowledge and viewpoint. The program in Business Economics recognizes the close relationships between these areas of study. The program in Management Science is designed to prepare students for positions where computer methods and mathematics are applied to the systematic analysis of functional problems in administration. The program in Urban and Regional Studies combines courses from many disciplines, including economics, sociology, political science, civil engineering, landscape architecture, and agricultural economics. The specific content of a special program joining business studies with work in a discipline outside the business school is mutually determined by the department chairman and the student.

### Management

Management majors are prepared to assume leadership positions in various types of organizations: business, government, and non-profit institutions such as hospitals, universities, and research organizations. Basically, all management majors become thoroughly acquainted with the essential functions of organizations, particularly operations, financial and marketing, and with the elements of managing such as planning, developing an organization structure, motivating employees, and controlling performance. Most importantly, thorough training is provided in the skills of human relations and in understanding the behavior of people at work. Courses normal

## School of Education

include such topics as management practices, personnel policies, manpower planning, social responsibilities of business, labor and industrial relations, the uses of computers in organizations, and theories of organizational behavior.

Through the judicious use of departmental and outside electives, the management major can build a program geared to career aspirations in areas such as general management, personnel management, operations management (emphasizes the efficient managing of the production of goods and services, and explores in greater depth the uses of computers and quantitative aids to planning and decision making) and systems management (prepares the student for work in systems analysis, management role in the large scale, multi-organizational systems found in education, health, and urban affairs).

### Marketing

The role of marketing management in our economy is becoming increasingly important. The Department of Marketing offers a broad range of courses for those students interested in careers in marketing administration, product / service planning and development, sales management, advertising, marketing research, and wholesale, and retail enterprises. The department's objective is to provide a specialized and comprehensive understanding of today's managerial marketing problems, whether they pertain to the business sector or marketing-conscious nonprofit organizations.

### EDUCATION

The School of Education is committed to developing alternative educational programs to address significant educational issues in contemporary American society. The School has a strong graduate program leading to doctorates and M.Ed.'s in Education as well as the Certificate of Advanced Graduate Study. The undergraduate program focuses on teacher education for both elementary and secondary certification. The School attempts wherever possible to develop individualized programs.

Clusters are the basic academic unit of the School, operating as focal points for the various teacher education programs. Presently the clusters are: Designs for Effective Learning, Division of Educational Planning and Management, Division of Humanistic Applications of Social and Behavioral Sciences in Education, Educational Policy Studies, and Transdisciplinary Education. A more detailed description of the academic focus of each cluster follows this section.

An integral part of the academic program is the administrative/instructional procedure called Flexible Curriculum, based on the philosophy that alternative instructional formats provide an improved potential in the effectiveness and responsiveness of a total curricular program. Each Learning Experience carries an agreed-upon number of modules of credit on an accumulating basis. One hundred modules is equivalent to 1 University credit. There also exists significant opportunity for individualized study, including independent studies and practica.

All teacher education programs leading to certification are coordinated and approved through the Teacher Education Council (TEC). There are over a dozen alternative programs currently available for candidates in elementary or secondary teacher education, many of which have inservice as well as preservice components. Placements for field work are available in a wide variety of locations ranging from areas in Western Massachusetts to international locations.

All students seeking certification must enroll in a TEC program. Those students majoring in Education but whose career plans do not include teaching, may develop a non-teaching major within the School of Education.

Students are encouraged to inquire at the Education Advising Office, 125B

School of Education, concerning specific credential programs and for information about the non-teaching major.

### CLUSTERS

#### Designs For Effective Learning (DEL)

The students, staff and faculty of this cluster have joined together to help build designs for effective learning, and share the following commitments:

- 1) Learning through experience — to create institutional means for a *reality-based* education for undergraduates, graduates and inservice personnel.
- 2) Learning throughout life — to create models for *open-ended* education for all involved in the education process - from students and paraprofessionals through administrators, parents, and community leaders.
- 3) Learning to change — to enable schools, programs, and institutions to adapt through *continuous self-renewal* for the needs of the future.
- 4) Learning through diversity — *combating institutionalized and personal racism* in the cluster's programs and in training others to do so.
- 5) Creating a new design for higher education — to evolve an institutional model for a *new design* for higher education.

The students, staff and faculty believe that most successful ventures in changing schools have resulted from a combination of graduate and undergraduate programs with specific goals (such as designing a comprehensive model for developing human potential, implementing effective open classrooms, or improving urban schools). The cluster prepares preservice and inservice personnel, teacher trainers, administrators, and researchers to act as catalysts for educational renewal. By combining field-based programs with academic disciplines, a new model for higher education has emerged which promises a growing influence over the quality of learning throughout the country.

#### Division of Educational Planning and Management (DEPM)

The primary goal of the Division of Educational Planning and Management cluster is to promote the welfare of its students with regard to learning experiences, administrative support services, financial support, sense of community and information needs. DEPM is com-



prised of six academically oriented sub-units. These sub-units are the Center for Curriculum and Organization (CCO), the Center for Educational Research (CER), the Clinic to Improve University Teaching (CIUT), the Center for Leadership and Administration (CLA), the Center for Occupational Education (COE), and the Academic Disciplines Program: Science and Social Studies.

To confront problems in schooling at a fundamental level, the Center for Curriculum and Organization prepares its members to focus on the teacher-learner encounter in schools. Systematic change at this level, where the concerns of the students, teachers, administrators, and parents concentrate for a minimum of 10 years in most children's lives, is the Center's priority.

The Center for Educational Research specializes in research, development, dissemination, and evaluation work within the context of professional education. Although educational research and development is the primary area of interest of CER, the faculty and students cooperatively participate in a variety of activities and services which are natural offshoots of this main function.

The Clinic to Improve University Teaching was established in 1972 to assist faculty members in improving the quality of instruction offered to students. Supported by a W. K. Kellogg Foundation grant, the Clinic has developed and refined a teaching improvement process which enables individual instructors, at elementary, secondary and University levels, to work with trained Teaching Improvement Specialists to assess and improve their teaching effectiveness.

The Center for Leadership and Administration seeks to provide opportunities for each student to enhance his/her qualifications to assume important leadership positions in education. To achieve these ends, CLA relies on active involvement of each degree candidate in one or more peer advisory and support groups; close interactions between students and staff members in a variety of situations, formal and informal; and maximum responsibility and initiative for his/her own program development by each student.

The focus of the Center for Occupational Education is to instill quality and professionalism into teaching in occupational education; to thoroughly equip and train teachers in specific occupational

areas, to develop leadership and administrative abilities in occupational educators; and, through related research, to develop new and relevant occupational programs.

The primary responsibility of the Academic Disciplines Program (Science and Social Studies) on the undergraduate level, is to prepare students from other academic departments for a career as secondary science or social studies teachers.

#### **Division of Humanistic Applications of Social and Behavioral Sciences in Education (HAPPS)**

This cluster seeks to assist people in their historical and ontological vocation of becoming more fully human by applying the social and behavioral sciences directly to the education of individuals and to the transformation of the institutions that facilitate or impede human development. All members of the cluster, both faculty and students, attempt to answer in practice the questions, "what is full humanness?", and "how can we more effectively help people become more fully human?". However, there are productive differences among cluster members in viewpoint, emphasis and applications of their answers to these two questions. Members draw from a wide range of theories for definitions of full humanness: humanistic psychology, theoretico-empirical descriptions of the universal stages of human development, philosophic, economic and social psychologies. Change methods vary from individual counseling and therapy to group methods for deliberate psychological education to organizational development strategies for changing larger social systems. The settings in which these methods are applied also vary widely from schools, mental hospitals and prisons to detention centers, half way houses, community mental health centers, drug education units. This diversity of response to the cluster's basic goal is strongly encouraged as a way of maintaining a synergistic group of professionals.

The pressing need for new, more effective, more widespread assistance demands that the programs have a strong innovative, applied experimental core. However, the cluster is not interested in creating a new breed of elite professional technicians, or in establishing new certi-

fication procedures that artificial create a scarce service resource. On the contrary, it is committed to the demystification of its goals and methods through national and international dissemination of the skills that help people become more fully human.

#### **Educational Policy Studies (EPS)**

The primary concern of EPS is with attaining greater understanding of a wide variety of aspects of the education process through systematic theory-based investigation and action.

The major focus is on attaining great understanding. Thus, action projects which intend to test or apply some aspect of theory, or which seek to increase understanding of the educational process, are highly encouraged within EPS. A wide variety of aspects of the educational process is of concern to EPS. These aspects may be defined by theory of discipline (e.g., philosophy, psychology, history of education, etc.); by function (e.g., teaching, curriculum, administration, etc.); by level of instruction (e.g., early childhood, elementary, secondary, post-secondary, etc.); by educational problems (e.g., international education, racism in education, civil rights of students and teachers, etc.) or by any other category system.

EPS operates via systematic, theory-based investigation and action. Experiments which test a theory, action projects which apply theory, and conceptual investigations which develop and combine theories are highly encouraged. Ultimately the concern of EPS is to bring systematic knowledge to bear on matters of public policy and particularly the aspects of public policy which effect the formulation and modification of educational policy.

#### **Transdisciplinary Education (TD)**

The Transdisciplinary Education cluster believes that within a complex society individual must have a basic understanding of his or her environment. This can be achieved within the school setting through the study of transdisciplinary topics such as perception, rhetoric, movement both as distinct entities and elements germane to all disciplines.

This cluster concentrates on the training of effective professionals in the fields of bilingual / bicultural education, communication arts (arts and humanities, reading and media), special education,



## School of Engineering

and transdisciplinary education / alternative schools.

Participants in Transdisciplinary education cluster programs often utilize the resources in the four other clusters in the School of Education.

Faculty members and graduate students of the cluster are committed to addressing the urgent issues of education in the 70's and to thinking and working for the strongest possible programs of undergraduate and graduate training.

### Human Development

Human Development was formerly a department in the School of Home Economics with offices in Skinner Hall. In a move to consolidate resources, the University initiated provisional affiliation of the Human Development Department with the School of Education during the fall 1974 semester. Students interested in Human Development should contact the Early Childhood Education Program in the Educational Policy Studies cluster.



The School of Engineering offers curricula in Chemical Engineering, Civil Engineering, Industrial Engineering and Operations Research, Electrical and Computer Systems Engineering, and Mechanical and Aerospace Engineering. Each of the curricula leads to the Bachelor of Science degree in that particular branch of engineering. All curricula are accredited by the Engineers Council for Professional Development.

Engineering is the profession in which a knowledge of the mathematical and natural sciences gained by study, experience, and practice is applied with judgment to develop ways to utilize, economically, the material and forces of nature for the benefit of mankind. An engineer requires intensive technical training but at the same time should acquire the broad education that distinguishes the professional person from the technician. An engineer's education does not end with formal schooling but continues throughout life as experience accumulates.

The curricula in engineering have been carefully prepared to offer each student the opportunity to acquire the sound training in mathematics and the basic sciences of chemistry and physics upon which is built the work in engineering sciences. In the senior year, courses are offered which allow the use of previous training for engineering analysis, design, and engineering systems in the student's particular field of interest. About 20 percent of class time is devoted to studies in the social science and humanistic area. Some opportunity is provided to elect courses from both the technical and humanistic-social fields. The curriculum of the freshman year is the same for all. Specialization to a limited extent begins in the sophomore year.

The School contains five administrative departments, and there are a variety of optional programs available to upper-class students in each of these departments. Many of these are interdisciplinary in nature and cut across departmental lines. Thus, for example, students may concentrate in areas such as Materials, Systems, the Environment, Bioengineering, Food Engineering, Pre-Medical, Transportation, Urban Systems, and Energy.

Although the curricula within the School of Engineering are shown as eight semesters (normally four years), they require up to 130 semester hours credit

for satisfactory completion. This is well above the University minimum of 120 semester hours for a degree and it requires intensive work in mathematics, science and engineering. As a result even students in good academic standing frequently elect to extend their programs into a ninth and sometimes a tenth semester.

### Freshman Engineering

All new students in engineering are enrolled in the Freshman Engineering Program until qualified to enter into a degree program. This is normal upon satisfactory conclusion of the uniform freshman year.

#### COURSE REQUIREMENTS— Freshman Year

| First Semester                       | Credits         |
|--------------------------------------|-----------------|
| RHET 100                             | 3               |
| MATH 131                             | 4               |
| CHEM 110                             | 4               |
| ENGIN 103 or 104                     | 3               |
| Soc. Sci./Hum. Elective              | 3               |
| <b>Second Semester</b>               | <b>Credits</b>  |
| Rhetoric Elective                    | 3               |
| MATH 132                             | 4               |
| Hum., Soc. Sci. or Science Elective* | 3               |
| ENGIN 103 or 104                     | 2 or 3**        |
| PHYSIC 161                           | 4               |
| <b>Total</b>                         | <b>16 or 17</b> |

\*Students select a Humanity, Social Science, or Science course at this time. The Science Elective requires the adviser's approval and consists of a course from the following departments: Astronomy, Biochemistry, Biology, Botany, Chemistry, Entomology, Geology, Microbiology, Physics or Zoology. Past history indicates that many students who take Mathematics, Physics, and a Science elective all in one semester find the academic load difficult. The following alternatives are thus recommended:

- 1) For students who have found the first semester, freshman year, reasonably difficult and who do not yet have clearly defined ideas of what their majors will be, the choice should be a Social Science Humanity Elective.
- 2) For students who have found the first semester reasonably easy and who do not have clearly defined ideas of what their major will be (See 3 and 4 following), choice may include the Science Elective.
- 3) For students who know definitely what they will choose or think that they may possibly choose Chemical Engineering as a major, the choice should be Chemistry 112.
- 4) Students who have specific scientific interests (Biology, Geology, etc.) may choose appropriate courses in those interest areas at this time or may prefer to delay this choice until a later semester when the courses may better integrate with the work in their major fields.

\*\*Engineering 103/104—Students taking 103/104 are required to successfully complete five modules for 5

credits. An additional module for 1 credit may be taken. Two of the modules must be Computer (104) and (Computer I and II).

### **Chemical Engineering**

Chemical Engineering centers around the creation, development, design and operation of processes for bringing about chemical and certain physical changes in materials. Chemical engineers may be engaged in any of a wide range of activities concerned with converting an idea to a profit. These include research and development, economic and market analysis, design, construction, operation, production supervision, sales, technical service, and management. Basic research for new knowledge, teaching, and consulting also offer challenging and rewarding careers for many chemical engineers. Chemistry, physics and mathematics are the underlying sciences of chemical engineering and economics is its guide in practice.

Chemical engineers are in demand by industries manufacturing chemicals and also by the many related "chemical process industries," including petroleum refining and petrochemicals, plastics, synthetic fibers and textiles, pulp and paper, drugs and pharmaceuticals, natural and synthetic rubber, foods, soaps and detergents, paints and synthetic coatings, gas and coal chemicals, steel and all the metal manufacturing industries and many others. Much of the work of the atomic energy program is chemical engineering, and new fields to which chemical engineers are contributing include biomedical, environmental, and ocean engineering.

The Chemical Engineering Department has also introduced several innovations in career preparation in addition to its traditional chemical engineering program. These new developments offer much flexibility and provide the opportunity for a student to concentrate in career-oriented and interdisciplinary programs culminating in the award of an accredited B.S. degree in Chemical Engineering with emphasis in one of several chosen interdisciplinary fields of specialization. These include environmental engineering, bioengineering, food science and engineering, and business administration.

Most recently added is the new Pre-Medical Option in Chemical Engineering, which can provide an alternate and attractive route to medical school. With minor modifications in the basic chemi-

cal engineering program, a student can also satisfy the course requirements for admission to medical school. At the same time, he or she will continue to have the option open for future graduate study in chemical or biomedical engineering.

These several options and the program flexibility they represent are already attracting a substantial additional enrollment in the Chemical Engineering Department.

### **Civil Engineering**

Civil engineering is concerned with all kinds of construction — buildings, bridges, highways and railways, airports, rivers and canals, harbors, dams, pipelines, etc. Transportation, the efficient and economical transfer of people and goods from place to place, is another concern of civil engineers. They are also deeply involved in providing adequate and safe supplies of water for homes and industries, in controlling and limiting the pollution of lakes, streams and oceans, and of the atmosphere. Civil engineers have assumed major responsibilities in ocean engineering, for construction and other operations, for underwater exploitation of mineral and other resources in the seas, and for planning and organizing the transportation that will be required eventually in regions of underwater activity. Various specialized areas of civil engineering such as hydraulic engineering and fluid mechanics, soil mechanics and foundations engineering, surveying and mapping, structural engineering and materials engineering, make essential contributions to the above activities.

In every area of civil engineering there is the choice of a wide range of activities: research to obtain new knowledge, development of practical methods, utilizing existing knowledge and the results of research, designing projects which satisfy known requirements, planning for maximum economy and efficiency, construction according to plans and specifications, and operation and maintenance. In addition, civil engineers are always deeply involved in and are frequently in charge of large-scale projects which involve many fields of activity and require the coordination of activities of experts with different backgrounds such as urban planning, water resource management, and transportation systems. In general, civil engineering is a field of activity which is concerned with the

public well-being through protection and control of our environment.

### **Electrical and Computer Engineering**

Electrical engineering is the application of electrical and mathematical principles to the solution of engineering problems and to the design of the electrical and electronic equipment of the future. A wide variety of electrical systems will serve mankind by performing important and complex tasks. Modern communication systems, high speed computers, and biomedical instrumentation are just a few of the creations of electrical engineers. Because of the diversity of an electrical engineering program, our graduates are employable in sales, production, design, development, research and management positions.

The undergraduate curriculum is designed to prepare each student for work in any of these fields and to serve as a basis for further specialization. A continued study after graduation is essential in this rapidly growing field. Basic physical and systems principles are emphasized in the undergraduate program. Courses taken outside of the department in liberal arts and other engineering disciplines provide the student with a broader understanding of engineering and its relationship to other fields.

The program leading to a degree Bachelor of Science in Computer Systems Engineering is also available to interested students. This program gives broad coverage to the various aspects of computer systems engineering and its underlying mathematics. However, there is much freedom for a student to explore in depth any area of particular interest to him or her. These areas include mathematics and theory of computation, machine organization, communication electronics and device technology, numerical analysis, and theory of programming languages and syntax analysis.

Although facility in computer programming is developed in the course of the program, it is emphasized that this is only a part of the program's goal of giving the student a deep understanding of computing machines and processes of computation. Thus, courses associated with computer design and applications are included as program requirements. Further information on these programs may be obtained from the Department.



Electrical and Computer Systems Engineering.

### Industrial Engineering and Operations Research

The behavior of operating systems in our society can be subjected to scientific study, and the results can be used by engineers to improve the operations of such systems. Thus, persons with knowledge and skills in operations research and industrial engineering are found in many kinds of organizations (such as airlines, manufacturing and production companies, banks, insurance companies, government agencies, health-care institutions, consulting firms, educational institutions, and research organizations) working to understand and improve their operations. Because the problems such people work on occur at all levels in these organizations, they have unusual opportunities to become widely acquainted with the problems, functions, technologies, and policies of these organizations. Thus, IE/OR workers are found at varied levels of management.

In view of the wide variety of potential careers for IE/OR people, the curriculum is flexible. The 11 required courses in the department (33 credit hours) sketch the central concepts of the profession and provide the core of its quantitative methods. Since the areas of application (and the potential careers) are so varied, a block of nine courses (27 credit hours) is set aside so that each student may design curriculum matching his/her interests;

this segment is developed in conjunction with his/her adviser, and may emphasize an area of application or a further exploration of methods. Students completing the program are prepared to pursue professions immediately, or to enroll for further work as graduate students.

### Mechanical Engineering

Mechanical engineers use the principles of dynamics, solid mechanics, fluid and gas dynamics, heat transfer, thermodynamics, and materials science together with mathematical and computer methods for application to research, development, design, and management in industry, government, and engineering education.

Students majoring in mechanical engineering may choose from alternative options emphasizing mechanical, aerospace, or materials studies. Extensive offerings exist in energy, manufacturing and design. Mechanical engineers design and analyze a wide variety of systems in fields such as manufacturing, energy conversion, and transportation. Aerospace engineers design and analyze systems for aircraft and space such as propulsion, astrodynamical, and vehicular. Materials engineers study the atomic structure of materials, polymers, materials processing, and materials analysis. All options are fundamental and flexible so that students may prepare for either professional employment or graduate study.

The College of Food and Natural Resources, the oldest college of the University, offers a broad general education with specific training in a specialized area. Upon the completion of the requirements for the Bachelor of Science degree, the student will have devoted his or her time to pure science, social and humanistic studies, and applied sciences and technology.

Undergraduate students in the College of Food and Natural Resources are exposed to an interdisciplinary, systems-oriented, problem-solving atmosphere that has been developed to a high degree.

A broad choice of electives within most of the major programs gives the student an opportunity to prepare for a career in business, industry, education, research, government, services or production agriculture.

A unique feature of the College of Food and Natural Resources is that the faculty for all the major programs is drawn from the three divisions of the College—research, resident teaching and extension, thereby bringing depth of teaching to every student.

All departments—Food and Resource Economics; Food and Agricultural Engineering; Entomology; Environmental Sciences; Food Science and Nutrition; Forestry and Wildlife Management; Hotel, Restaurant, and Travel Administration; Landscape Architecture and Regional Planning; Plant Pathology; Plant and Soil Sciences; Veterinary and Animal Sciences and the Division of Home Economics offer graduate degrees in a discipline or professional field.

### INTERNATIONAL AGRICULTURAL STUDIES (Interdepartmental Program)

The unprecedented increase in the human population of the world makes mandatory rapid increases in world food production. Estimates indicate that total food production must double by the year 2000 to maintain our current inadequate nutritional levels and must triple if reasonable improvement is to be accomplished.

Students in this major choose a program from among those offered in the College of Food and Natural Resources and carry a specialty of International Studies within the chosen major. Supplementing major requirements are selected courses in Sociology, Anthropology, Geography, Economics, and Political Science. An overseas professional experience





rience in an agricultural development program is considered essential and students are urged to volunteer for two years of service in the Peace Corps or a similar organization upon completion of their B.S. degree.

## STOCKBRIDGE SCHOOL OF AGRICULTURE

The Stockbridge School, an academic sub-unit of the College, offers two-year technically oriented programs in the food and agricultural sciences which lead to an Associate Degree. A separate bulletin describes these offerings in detail.

### Entomology

Courses in Entomology acquaint students with all phases of insects and insect control, including apiculture and medical entomology. Trained entomologists find positions in public service and industry, such as teaching at all levels; research, quarantine, and regulatory work in a state or federal service, various roles in public health and pest control activities; research, sales and public relations work in the agricultural chemicals industry; and agriculture.

#### Freshman Year

| First Semester                   | Credits |
|----------------------------------|---------|
| CHEM 111 General                 | 3       |
| MATH 127 Calculus                | 3       |
| Rhetoric elective                | 3       |
| Humanities or Soc. Sci. elective | 3       |
| Elective                         | 3       |
|                                  | 15      |

#### Second Semester

| Second Semester                  | Credits |
|----------------------------------|---------|
| CHEM 112 General                 | 3       |
| MATH 128 Calculus                | 3       |
| ZOOL 101 Introductory            | 3       |
| Rhetoric elective                | 3       |
| Humanities or Soc. Sci. elective | 3       |
|                                  | 15      |

### Environmental Sciences

The major program in Environmental Sciences emphasizes the integration of four essential elements: 1) information via scientific disciplines; 2) analysis of the multidimensional nature of environmental problems via problem-focused, man-oriented study; 3) basic technical skills in the methods of pollution measurement; 4) participation in the predictive decision-making aspects of environmental studies. Therefore, the following

four courses are required of all Environmental Sciences majors: ENVSCI 201 (Introductory Environmental Biology), 203 (Methods of Pollution Measurement), 390 (Perspectives of Environmental Sciences), and 391 or 392 (Seminar: Options in Environmental Management). In addition to the four required courses, students will elect four more courses from the upper level offerings of the department. The 24 credit Department of Environmental Sciences requirement plus the 44 credit math/science requirement will more than satisfy the 60 credit science/math requirement for a B.S. degree.

The Environmental Sciences major will have an outside the department requirement which will provide increased breadth and program flexibility, and thus, a broader context of his or her major area of competency. With the aid of an adviser, the student will choose and plan an integrated 12 credit course of study, and thereby individualize the program according to his or her needs and interests.

#### Sample Program

| Freshman Year                    | Credits |
|----------------------------------|---------|
| BOTANY 100                       | 4       |
| CHEM 111                         | 3       |
| F&R EC 177                       | 3       |
| RHET 100                         | 3       |
| Humanities (C) or Soc. Sci. (D)  | 3       |
|                                  | 16      |
| ZOOL 101                         | 3       |
| CHEM 112                         | 3       |
| Rhetoric (B)                     | 3       |
| Humanities (C) and Soc. Sci. (D) | 6       |
|                                  | 15      |
| Sophomore Year                   | Credits |
| CHEM 261 or 263                  | 4       |
| MATH 127                         | 3       |
| ENVSCI 201                       | 3       |
| Soc. Sci. (D)                    | 3       |
| Humanities (C)                   | 3       |
|                                  | 16      |
| CHEM 262 or 264                  | 4       |
| MATH 128                         | 3       |
| ENVSCI 203                       | 3       |
| ENVSCI Elective                  | 3       |
| Conjugate Area Elect.            | 3       |
|                                  | 16      |

Junior Year  
PHYSIC 141  
MICBIO 250  
ENVSCI 390  
Humanities (C) or Soc. Sci. (D)

PHYSIC 142  
MICBIO 251  
ENVSCI Elective  
Conjugate Area Elect.

Senior Year  
ENVSCI Elective  
Electives

ENVSCI 391 or 392  
Conjugate Area Elect.  
ENVSCI Elective  
Electives

### Food & Agricultural Engineering

This professional field includes engineering activities which relate macrophysical and microphysical environments to the production, preservation and processing of food and other biological materials. The academic program quantitative and emphasizes the integration of mathematics and the physical sciences into the interpretation and solution of biological production and processing problems. Food and Agricultural engineers find professional employment in a variety of industries as well as public and private agencies engaged research and development.

#### Freshman Year

| First Semester                     | Cred. |
|------------------------------------|-------|
| RHET 100, Language & Writing       |       |
| CHEM 111                           |       |
| MATH 135* Anal. Geom. & Calculus I |       |
| Social Sci. Elective               |       |
| ENGIN 103 Graphics                 |       |

#### Second Semester

| Second Semester                    | Cred |
|------------------------------------|------|
| Humanities Elective                |      |
| CHEM 112                           |      |
| MATH 136 Anal. Geom. & Calculus II |      |
| PHYSIC 161 General                 |      |
| ENGIN 104 Problems                 |      |

\*On basis of placement tests at time of summer counseling.

**Food & Resource Economics**  
**AGRICULTURAL ECONOMICS**

The program in agricultural economics is focused upon the application of principles of economics and business management to the problems of supplying agricultural businesses and the production and marketing of agricultural products. Growing demand for food and fiber products, both for domestic and foreign consumption, increases the importance of planning and management in the production and marketing of these products. Continual improvements in the efficiency of agricultural production and marketing are necessary to sustain a growing economy.

The rapidly changing agricultural industry offers increasing opportunities for students with specialized training in agricultural economics, as executives of marketing firms, farm supply organizations and food processing concerns. There are many other opportunities available to graduates in teaching and research, and in administrative positions in public service. Some graduates find well paying and rewarding positions in farm management operations.

**Freshman Year**

| First Semester                              | Credits |
|---------------------------------------------|---------|
| RIHET 100, or 110 (B)                       | 3       |
| Humanities (C)                              | 3       |
| Social Science (D)                          | 3       |
| MATH 110 El. Tech. of Math <sup>1</sup> (E) | 3       |
| F&R EC 110 World Food (D)                   | 3       |
|                                             | 15      |

| Second Semester                          | Credits |
|------------------------------------------|---------|
| Rhetoric (B)                             | 3       |
| Humanities (C)                           | 3       |
| Social Science (D)                       | 3       |
| Math or Natural Science <sup>2</sup> (E) | 3       |
| F&R EC 206 Agricultural Economics        | 3       |
|                                          | 15      |

<sup>1</sup>A more advanced mathematics course may be substituted, based on counselling.  
<sup>2</sup>Calculus is recommended, especially for students intending to apply for graduate school

**FOOD MARKETING ECONOMICS**

The food distribution industry is the largest single industry in the nation in terms of the number of persons employed and dollar sales. Our growing population and incomes create ever-increasing demands for food and food products. The industry must also be sensitive to chang-

ing needs and desires of consumers, and to efficiency in distribution if consumers are to have available to them the variety and quality of food products desired at reasonable prices.

The number of managerial and executive positions in the food industry is growing at a rapid rate as a result of the growth of the industry and increasing application of scientific management. There are also growing opportunities in educational, research and regulatory positions with firms and agencies serving the public and the food industry.

**Freshman Year**

| First Semester                              | Credits |
|---------------------------------------------|---------|
| RIHET 100, or 110 (B)                       | 3       |
| Humanities (C)                              | 3       |
| Social Science (D)                          | 3       |
| MATH 110 El. Tech. of Math <sup>1</sup> (E) | 3       |
| F&R EC 110 World Food (D)                   | 3       |
|                                             | 15      |

| Second Semester                          | Credits |
|------------------------------------------|---------|
| Rhetoric (B)                             | 3       |
| Humanities (C)                           | 3       |
| Social Science (D)                       | 3       |
| Math or Natural Science <sup>2</sup> (E) | 3       |
| F&R EC 206 Agricultural Economics        | 3       |
|                                          | 15      |

<sup>1</sup>A more advanced mathematics course may be substituted, based on counselling.  
<sup>2</sup>Calculus is recommended, especially for students intending to apply for graduate school

**RESOURCE ECONOMICS**

Increasing population and incomes combine to multiply the pressures on our land, water and other natural resources. As these pressures mount, careful planning and regulation will be required to insure a desirable allocation of land and water resources so that the demand for all uses (residential, industrial, agricultural, recreation, waste disposal and others) will be met. These needs must be met concurrently with an improvement in the quality of our living environment.

The Resource Economics program is designed to train students to assist in making public and private decisions on resource development and management which will contribute to the twin goals of greater resource productivity and improved environment. Students will study the many problems of resource use, the forces which have combined to create these problems, and the possible solutions to these problems. Training in

economic decision-making and the technical characteristics of specific natural resources provide a unique competence for these nationally important careers.

**Freshman Year**

| First Semester                              | Credits |
|---------------------------------------------|---------|
| RIHET 100, or 110 (B)                       | 3       |
| Humanities (C)                              | 3       |
| Social Science (D)                          | 3       |
| MATH 110 El. Tech. of Math <sup>1</sup> (E) | 3       |
| F&R EC 110 World Food (D)                   | 3       |
|                                             | 15      |

| Second Semester                          | Credits |
|------------------------------------------|---------|
| Rhetoric (B)                             | 3       |
| Humanities (C)                           | 3       |
| Social Science (D)                       | 3       |
| Math or Natural Science <sup>2</sup> (E) | 3       |
| F&R EC 206 Agricultural Economics        | 3       |
|                                          | 15      |

<sup>1</sup>A more advanced mathematics course may be substituted, based on counselling.  
<sup>2</sup>Calculus is recommended, especially for students intending to apply for graduate school

**Food Science & Nutrition**

Two majors are available in the Department: Food Science and Human Nutrition.

A major in Food Science provides scientific and technological training in the principles concerned with the processing, preservation, and packaging of foods and food products. The student's training is directed to the application of modern science and technology to research and to the manufacturing and distribution of foods. Major fields open to graduates include: 1) product research and development; 2) food processing and packaging; 3) technological work and research in government, industry and education; 4) advanced graduate study.

The curriculum in Food Science is designed to provide flexibility to meet the interests and objectives of the student as well as the opportunity to obtain professional training as recommended by the Institute of Food Technologists.

Six options are available in the food Science major: 1) Nutrition, 2) Business, 3) Processing and Engineering, 4) Chemistry, 5) Microbiology, 6) Independent Concentration.

A major in Human Nutrition provides an understanding of the problems of nutritional well-being which are of increasing concern to all segments of society. Undernutrition and deficiency

diseases exist in the developing nations, and at the same time the richer nations suffer from obesity and degenerative diseases.

The program in Human Nutrition leads to an understanding of the causes of some of our present problems in nutrition and suggestions for their alleviation. The varied career opportunities open to students with training in nutrition include research, community service, product development and demonstration, hospital dietetics and food service administration.

Four options are available in the Human Nutrition major: 1) Community and Public Health Dietetics, 2) Dietetics, 3) Computerization, 4) Independent Concentration.

#### Freshman Year

| First Semester       | Credits |
|----------------------|---------|
| RHET 100 or 110      | 3       |
| CHEM 111             | 3       |
| MATH 127             | 3       |
| Electives (C) or (D) | 6       |
|                      | 15      |

#### Second Semester

| Rhetoric             | Credits |
|----------------------|---------|
| CHEM 112             | 3       |
| MATH 128             | 3       |
| FS&N 251             | 3       |
| Electives (C) or (D) | 3       |
|                      | 15      |

#### Forestry & Wildlife Management FISHERIES BIOLOGY

Fisheries Biology is concerned in its broadest terms with the management of the aquatic environment in both freshwater and marine situations leading to maximum sustained yields of both sport and commercial catch. It deals with the management of resources and with fundamental factors affecting the biology of species from a research point of view.

Government, state, and federal, provides the largest number of career opportunities, although more recently private consulting groups are hiring significant numbers of undergraduates.

#### Freshman Year

| First Semester                        | Credits |
|---------------------------------------|---------|
| RHET 100 Language and Writing         | 3       |
| MATH 127 Calculus                     | 3       |
| BOTANY 100 Intro.                     | 3       |
| CHEM 111 Inorganic                    | 3       |
| NAREST 100 Cons. of Natural Resources | 3       |
|                                       | 15      |

#### Second Semester

| RHET 110 Language and Speaking | Credits |
|--------------------------------|---------|
| MATH 128 Calculus              | 3       |
| ZOOL 101 Introductory          | 3       |
| CHEM 112 Inorganic             | 3       |
| Social Sci. Elective           | 3       |
|                                | 15      |

#### FORESTRY

This major is concerned with the conservation and management, for the public benefit, of forests, park lands, and other open space through the production of wood, water, wildlife, and amenity values such as recreation and aesthetics.

The curriculum in Forestry is based on the biological, physical and natural sciences; a knowledge of the environment; and the social sciences. Six curricular options are offered: General Forestry, Environmental-Urban Forestry, Forest-Business Management, Forest Hydrology, Forest Recreation, and Forest Science.

This accredited program prepares graduates for continued education at the graduate school level, and for employment with private industry, federal and state resource agencies, secondary school education, conservation and planning organizations.

#### Freshman Year

| First Semester                        | Credits |
|---------------------------------------|---------|
| RHET 100 Language and Writing         | 3       |
| MATH 127 Calculus                     | 3       |
| CHEM 111 Inorganic                    | 3       |
| BOTANY 100 Intro.                     | 3       |
| NAREST 100 Cons. of Natural Resources | 3       |
|                                       | 15      |

#### Second Semester

| Rhetoric Elective  | Credits |
|--------------------|---------|
| MATH 128 Calculus  | 3       |
| CHEM 112 Inorganic | 3       |
| Humanities         | 3       |
| Social Science     | 3       |
|                    | 15      |

#### NATURAL RESOURCE STUDIES

A non-professional curriculum designed for students who wish to become generalists in the area of natural resource management and conservation, rather than specialists. Its primary objective is the education of an informed layman; it will not normally qualify students for employment within specific areas of the

natural resource field. The curriculum has a minimal core of specified course and offers great flexibility. Careful guidance coupled with early decisions will enable students to enter certain professional specialties and/or graduate school.

#### Freshman Year

| First Semester               | Credits |
|------------------------------|---------|
| RHET 100 or 110              |         |
| NAREST 100 Cons. Nat. Res.   |         |
| BOTANY 100 or ZOOL 101       |         |
| MATH (on basis of tests)     |         |
| Humanities or Social Science |         |

#### Second Semester

| Rhetoric Elective            | Credits |
|------------------------------|---------|
| Natural Resource Elective    |         |
| BOTANY 100 or ZOOL 101       |         |
| CHEM 110 (or higher)         |         |
| Humanities or Social Science |         |

#### WILDLIFE BIOLOGY

The first professional degree in Wildlife Biology is the Master of Science; for this reason study toward the Bachelor of Science in Wildlife Biology should be regarded as pre-professional. Students planning to enter graduate school are urged to meet with their advisers.

#### Freshman Year

| First Semester    | Credits |
|-------------------|---------|
| RHET 100 or 110   |         |
| MATH 127 Calculus |         |
| CHEM 111 General  |         |
| BOTANY 100 Intro. |         |
| NAREST 100        |         |

#### Second Semester

| Rhetoric (B) Course   | Credits |
|-----------------------|---------|
| MATH 128 Calculus     |         |
| CHEM 112 General      |         |
| ZOOL 101 Introductory |         |
| ECON 103              |         |

#### WOOD SCIENCE & TECHNOLOGY

The program in Wood Science & Technology emphasizes studies in the nature and properties of wood, the engineering and chemical technology of its manufacture into a variety of useful products, and the business aspects of industrial management and marketing. Strong demand



dist for graduates in wood-processing  
rms and service-related industries, and  
marketing and merchandising.

**Freshman Year**

| First Semester               | Credits |
|------------------------------|---------|
| HET 100 Language and Writing | 3       |
| MATH 123 Calculus            | 3       |
| OTANY 100 Intro.             | 3       |
| HEM 111 Inorganic            | 3       |
| NGIN 103 Introductory        | 3       |
|                              | 15      |

| Second Semester               | Credits |
|-------------------------------|---------|
| HET 110 Language and Speaking | 3       |
| MATH 124 Calculus             | 3       |
| DREST 112 Dendrology          | 3       |
| HEM 112 Inorganic             | 3       |
| NGIN 104 Introductory         | 2       |
|                               | 14      |

**Home Economics**

The Division of Home Economics offers undergraduate programs emphasizing a liberal education in the sciences, arts and humanities, with specialized instruction and preparation indigenous to professional career options in Home Economics.

Professional home economists serve individuals, families and communities throughout the world through elementary, secondary, postsecondary schools and colleges, cooperative extension programs, employment in major business organizations and agencies, journalism, radio and television. Some of the representative types of professional activities engaged in by home economists are, therefore, teaching, research, journalism, aesthetics, fashion marketing, food service management and product development, as well as cooperative extension and community-service-oriented activities in social welfare and rehabilitation programs. The Bureau of Labor in its recent publication of *Occupational Outlook Handbook* stated that the decade of the 70s could be very favorable in terms of employment opportunities for the home economist particularly in teaching and service-oriented occupational fields.

The professional options in the Division of Home Economics include the following:

- Home Economics Education
- Fashion Marketing
- Home Economics Cooperative Extension

**4) Consumer Economics**

**5) Community Services**

Individualized interdisciplinary programs may be pursued in consultation with the Director of the Division and under the advisorship of a faculty committee.

Programs for majors in the Division of Home Economics for the Freshman year:

**HOME ECONOMICS EDUCATION OR FASHION MARKETING**

| First Semester                          | Credits |
|-----------------------------------------|---------|
| RHET 100                                | 3       |
| PSYCH 101 or SOCIOL 101 or ECON 100     | 3       |
| Math or Science                         | 3       |
| HEED, Majors elect:                     |         |
| HOM EC 259, Quality Analysis of Apparel | 3       |
| HOM EC 240, Textiles for Consumer 13    |         |
| Fashion Mktg. Majors elect:             |         |
| HOM EC 170, Fashion Marketing           | 3       |
| HOM EC 240, Textiles for the Consumer I | 3       |

| Second Semester                            | Credits |
|--------------------------------------------|---------|
| RHET 110                                   | 3       |
| PSYCH 101 or SOCIOL 101 or ECON 100        | 3       |
| Math or Science                            | 3       |
| HEED, Majors elect:                        |         |
| HOM EC 125, Basic Design                   | 3       |
| HOM EC 255, Man & Clothing                 | 3       |
| Fashion Mktg. Majors elect:                |         |
| HOM EC 255, Man & Clothing                 | 3       |
| HOM EC 276, Product Analysis: Non-Textiles | 3       |

**CONSUMER ECONOMICS, COOPERATIVE EXTENSION OR COMMUNITY SERVICES**

| First Semester                              | Credits |
|---------------------------------------------|---------|
| RHET 100                                    | 3       |
| PSYCH 101 or SOCIOL 101                     | 3       |
| ECON 100                                    | 3       |
| Math or Science                             | 3       |
| Elective                                    | 3       |
| Second Semester                             | Credits |
| RHET 110                                    | 3       |
| PSYCH 101 or SOCIOL 101                     | 3       |
| HOM EC 211, Economic Problems of the Family | 3       |
| Electives                                   | 6       |

**Hotel, Restaurant & Travel Administration**

The curriculum in Hotel, Restaurant & Travel Administration provides technical and professional courses for persons

who plan a career in ownership, management, or sales in the hotel/motel, food service, and travel fields. In addition to the required core curriculum courses, students take courses in accounting and control; personnel and management; food planning, purchasing, preparation, and service; promotion, merchandising and sales; kitchen planning and maintenance, travel and tourism. Emphasis is on principles, analysis, computer application, and decision-making.

**Freshman Year**

| First Semester                | Credits |
|-------------------------------|---------|
| RHET 100 Language and Writing | 3       |
| MATH 120                      | 3       |
| HRTA 100 Introduction         | 3       |
| Science Requirement*          | 3       |
| PSYCH 101 or SOC 101          | 3       |
| HRTA 203 Guest Lecturers      | 1       |
|                               | 16      |

| Second Semester                | Credits |
|--------------------------------|---------|
| RHET 110 Language and Speaking | 3       |
| HRTA 156 Food Prod. Mang. I    | 3       |
| Science Requirement*           | 3       |
| Humanities Requirement**       | 3       |
| STATIS 121 or F&R EC 177       | 3       |
|                                | 15      |

\*Elect course identified by letter (E) in catalog.

\*\*Elect course identified by letter (C) in catalog.

**Landscape Architecture & Regional Planning**

**ENVIRONMENTAL DESIGN**

The Department of Landscape Architecture and Regional Planning offers a non-professional program in Environmental Design which prepares students for professional study at the graduate level in Planning and / or Landscape Architecture. It provides, also, an introduction to the problems of the planning for and the design of the physical environment for those not intending to pursue graduate study.

While the professions of Planning and of Landscape Architecture each has its own special outlook, they often merge in intent and process. Landscape Architecture is a design profession and may be viewed as the conscious ordering of plants, buildings, roads, walks and other related structures in three dimensional space to further human purposes. The Landscape Architect brings a concern for people, for the natural environment and for visual quality to bear on that ordering.

The Planner is responsible for developing alternative methods of achieving community and/or regional goals, and for anticipating the future impact of each of those alternatives. There are many kinds of planners, and planning can be approached from many disciplines. This department is concerned with city and regional planning. It emphasizes the constraints and opportunities provided by land as the primary resource base. By selecting appropriate courses in other departments, the student may stress, also, social, economic and/or political factors which influence planning at various governmental levels.

Students who are interested in Planning and/or a general introduction to problems of the physical/visual environment should select courses under the parent major: Environmental Design; those interested in Landscape Architecture should select courses under the Option in Design Studio, which has limited enrollment.

A 2.0 cumulative quality point average is required for admission as a major in this department. Admission to the Design Studio Option and to the senior year studio courses is based on the following criteria: 1) Demonstrated aptitude in design; 2) an overall cumulative average of not less than 2.50; 3) a cumulative average in departmental courses of not less than 3.00; and 4) permission of the design faculty.

Aptitude in design is measured through a one-day testing program taken at the end of the Sophomore year. Interested Sophomores and potential transfer students should sign up during the Spring Counselling Period for the tests which are given on several occasions in late May.

Freshmen and Sophomores should concentrate on fulfilling University core requirements. Some recommended courses are:

for *Env. Des. majors*: HIST 150, 151; ECON 103; POL SCI 220; PSYCH 101; SOCIOLOGY 103; BOTANY 100; GEOL 101; STATIS 231, 232.  
for *Design Studio Opt.*: ART 100, 111, 113; ANTH 104; SOCIOLOGY 103; PSYCH 101; BOTANY 100 or 121; GEOL 101.

#### PARK ADMINISTRATION

The Department of Landscape Architecture & Regional Planning offers a program in Park Administration which, depending upon student interest, pre-

pares the student for management positions in parks administered at the municipal/regional, the state, and the federal levels of government. The Park Administrator is involved in park and open space planning and development, and in the management of such areas so as to insure their high quality environments over the long range.

A 2.0 cumulative quality point average is required for admission as a major in this department. Freshmen and Sophomores should concentrate on fulfilling University core requirements. Certain core courses are required for this major and others are recommended as follows: *Required*: PSYCH 101; SOCIOLOGY 101; BOTANY 100 or 121; STATIS 231  
*Recommended*: HIST 150, 151, 333; POL SCI 219 or 220; BOTANY 221; GEOL 101; STATIS 232.

#### Plant Pathology

Plant Pathology is concerned with the nature and control of plant diseases caused by fungi, viruses, bacteria, nematodes, certain higher plants and unfavorable environmental conditions. Plant pathologists fill positions in public service and in industry, such as teaching at all levels; research in state, federal, university, and industrial laboratories and experiment stations; and Extension Service, through federal, state and county organizations. They are also employed in quarantine and regulatory work, in various roles in plant disease control, and in sales and public relations work.

#### Freshman Year

| First Semester                                      | Credits  |
|-----------------------------------------------------|----------|
| *Mathematics                                        | 3        |
| CHEM 111 General                                    | 3        |
| BOTANY 100 General                                  | 3        |
| Foreign Lang. or F&R EC 110, World Food & Nat. Res. | 3        |
| RHET 100                                            | 3        |
|                                                     | <hr/> 15 |

#### Second Semester

| Second Semester   | Credits  |
|-------------------|----------|
| PLPATH 100        | 3        |
| CHEM 112 General  | 3        |
| ZOOL 101 General  | 3        |
| Elective          | 3        |
| Rhetoric Elective | 3        |
|                   | <hr/> 15 |

\*On basis of placement tests at time of summer counseling.

#### Plant & Soil Sciences

The Department of Plant & Soil Science offers three options for major students. Options are selected on the basis of student interest and career goals.

**Plant Industry** - With the increasing emphasis and demand for high quality food and more aesthetically pleasing surroundings, the plant industry curriculum provides students with the scientific basis of soil and plant relationship necessary for meeting these needs of society. The curriculum provides a general knowledge of economic plants and by careful selection of courses, program are developed in the following specialized areas:

**Agronomy** is the study of forage and grain crops which produce the basic food supply for both human and animal consumption. The demand for trained people is strong due to the shortage of food and fiber in relation to expanding world population.

**Floriculture and Ornamental Horticulture** is the study of plants which make our nation a more beautiful place in which to live. With more leisure time and emphasis being placed on the quality of life, the demand for people trained in the production and use of flowers and ornamental plants will remain strong.

**Pomology** is the study of the production and storage of high quality fruit. The demand for trained people will continue as long as people have need for fruit with delightful flavors and aromas, as well as nourishing food.

**Vegetable Crops** is the study of vegetable food plants that supply good nutrition and variety to diets. Persons trained in production, storage and marketing of these important food plants will continue to be in demand.

**Turf Management** is the study of grasses used for lawns, parks, golf courses, roadsides, athletic fields and other recreational areas. With more leisure time and expanding recreation opportunities, the demand for trained people will continue.

#### Freshman Year

| First Semester                | Credits |
|-------------------------------|---------|
| RHET 100, Lang. & Writing     |         |
| or RHET 110, Lang. & Speaking |         |
| BOTANY 100, Intro. Botany     |         |
| *Mathematics                  |         |
| PLSOIL 110, Plant Propagation |         |
| "D" Course                    |         |

| Second Semester             | Credits |
|-----------------------------|---------|
| Rhetoric "B" Course         | 3       |
| "C" Course                  | 3       |
| CHEM 110, Gen. Inorganic    | 4       |
| PLSOIL 100, Basic Plt. Sci. | 3       |
| "D" Course                  | 3       |
|                             | 16      |

\*Mathematics - On the basis of placement tests at time of summer counseling. Statistics or Computer Science may be substituted for mathematics.

**Plant Science** - In today's world there is a great need for highly trained people in the plant sciences to teach and study the fundamental physiological and genetic processes taking place within plants. A more complete understanding of these processes and the influence of environmental factors upon them will lead to a significant improvement in the supply and quality of food and fiber. Students who are interested in such careers as plant breeder and geneticist, secondary and college teaching, research and resource development and like professions should major in Plant Science. This option is designed to provide the breadth and depth in basic biological and physical sciences and mathematics necessary for graduate study and the essentials of plant industry.

| Freshman Year                                           |         |
|---------------------------------------------------------|---------|
| First Semester                                          | Credits |
| RHET 100, Lang. & Writing or RHET 110, Lang. & Speaking | 3       |
| BOTANY 100, Intro. Botany                               | 4       |
| *Mathematics                                            | 3       |
| PLSOIL 110, Plant Propagation                           | 3       |
| "D" Course                                              | 3       |
|                                                         | 16      |
| Second Semester                                         | Credits |
| Rhetoric "B" Course                                     | 3       |
| "C" Course                                              | 3       |
| *Mathematics                                            | 3       |
| PLSOIL 100, Basic Plt. Sci.                             | 3       |
| "D" Course                                              | 3       |
|                                                         | 15      |

\*On the basis of placement tests at time of summer counseling.

**Soil Science** - Soil Science deals with the physical, chemical and biological properties of soils as well as their relationship with higher plants. Students trained in this area become soil chemists, soil physicists, soil microbiologists,

hydrologists, and soil conservationists. Graduate study is desirable for professional careers in soils and the soils curriculum is designed to provide the necessary breadth and depth in biological and physical sciences and mathematics for graduate study.

| Freshman Year                                           |         |
|---------------------------------------------------------|---------|
| First Semester                                          | Credits |
| RHET 100, Lang. & Writing or RHET 110, Lang. & Speaking | 3       |
| BOTANY 100, Intro. Botany                               | 4       |
| *Mathematics                                            | 3       |
| PLSOIL 110, Plant Propagation                           | 3       |
| "D" Course                                              | 3       |
|                                                         | 16      |
| Second Semester                                         | Credits |
| Rhetoric "B" Course                                     | 3       |
| "C" Course                                              | 3       |
| *Mathematics                                            | 3       |
| PLSOIL 100, Basic Plt. Sci.                             | 3       |
| "D" Course                                              | 3       |
|                                                         | 15      |

\*Mathematics - On the basis of placement tests at time of summer counseling. Statistics or Computer Science may be substituted for mathematics.

### Veterinary and Animal Sciences

The curriculum in the Animal Sciences, including poultry, is designed to provide fundamental training and knowledge in the comparative nutrition, physiology, genetics, and management of various classes of livestock and to understand the role of animal production in the national and world economy. Options emphasizing commercial animal production are supported by electives in agricultural economics, agricultural engineering, and business administration. Students interested in graduate work in such specialized areas of the animal sciences as nutrition, physiology or genetics should elect programs with stress on the sciences. Freshman pre-veterinary students in the College of Food and Natural Resources usually major in Animal Sciences, but may choose other departments if appropriate to the students' interests. Those who by their work in the first year demonstrate a potential for success should apply to the Pre-Professional Advisory Committee for admission into the pre-veterinary program (see page 50 under heading Pre-Dental, Pre-Medical, etc. for additional information). All pre-veterinary stu-

dents, regardless of major, are counseled by the pre-veterinary adviser in the Animal Sciences Department.

### Freshman Year

| First Semester        | Credits |
|-----------------------|---------|
| AN SCI 121 Introduct. | 3       |
| BOTANY 100 General    | 3       |
| CHEM 111 General      | 3       |
| *Mathematics          | 3       |
| RHET 100              | 3       |
|                       | 15      |

| Second Semester   | Credits |
|-------------------|---------|
| Elective          | 3       |
| CHEM 112 General  | 3       |
| *Mathematics      | 3       |
| Social Sci.       | 3       |
| Rhetoric Elective | 3       |
|                   | 15      |

\*On basis of placement tests at time of summer counseling.



## School of Health Sciences

The School of Health Sciences includes the Division of Nursing, the Division of Public Health, and the Department of Communication Disorders.

### Division of Nursing

The Division of Nursing offers an undergraduate program which leads to the degree of Bachelor of Science in Nursing (B.S.N.). This program is approved by the Board of Registration in Nursing, Commonwealth of Massachusetts, and is accredited by the National League for Nursing. Enrollment in recent years has been highly competitive, and is currently limited to 200 students per class. There will be no admissions to this program for the 1977-78 academic year.

There are two components of the program: 1) lower division core and university core requirements; and 2) the upper division nursing science major. Nursing core may be completed at the University of Massachusetts or in other colleges / universities. Nursing science courses (Junior and Senior Year) emphasize the role and functions of the professional nurse in assisting individuals and families to identify and/or to cope with their physical, psychosocial and environmental problems; in promoting and maintaining individual and family health; in providing primary and secondary health care to individuals and families augmented by the use of extended nursing functions and in providing continuity of care for patients and families.

Clinical learning experiences are community based in four Satellite Learning Centers. These Centers are located in the following geographic areas:

- a) Amherst-Northampton
- b) Franklin County
- c) Springfield-North
- d) Model Cities-Springfield

Students are responsible for their own transportation to the Satellite Learning Centers.

Currently, the undergraduate faculty is in the process of implementing new programs which are responsive to changing health needs and educational patterns.

### Requirements for Admission and Application Procedure

The requirements for admission to the upper division are: 1) successful completion of 60 semester hours of lower division preparation; 2) a minimum cumula-

tive grade point average of 2.5; 3) achievement of a grade of at least "C" in each pre-requisite course; and 4) a minimum grade point average of 2.5 for all core courses.

Students with a variety of academic and nursing backgrounds may apply for admission. Students may have earned credits in other colleges/universities in the Arts and Sciences or they may satisfy these requirements by satisfactorily completing CLEP (College Level Entrance Proficiency) Examinations in certain Arts and Science subjects, such as Chemistry, Microbiology, etc. (The University requires 45 semester hours credits to be taken in residence.)

The National League for Nursing Comprehensive Examinations will be used for guidance and placement in the program. Students in the major will be expected to take all senior level nursing science courses.

All students seeking admission and information concerning examination details and requirements should contact the Admissions Office or the Division of Nursing, who are available for individual counselling. All nursing students will be assigned a faculty adviser in the Division of Nursing.

The Division of Nursing is committed to Affirmative Action guidelines of the University of Massachusetts. Students lacking the required cumulative grade point average may apply for tutorial assistance.

### General Academic and Core Requirements for the Baccalaureate Program in Nursing

- 1) General Academic Requirements: Courses which satisfy University Core Requirements are:

Rhetoric — two courses  
Social and Behavioral Sciences — three courses  
Natural Sciences — three courses  
Humanities — three courses

In counselling sessions with an academic adviser, guidance will be offered in course selection.

- 2) Core requirements to the nursing major are starred (\*) as follows: Certain flexibility of sequence is possible within the following suggested framework, but the student should be aware of prerequisites to required courses.

### Freshman Year

#### First Semester

CHEM 111  
Humanities  
Rhetoric  
\*Anthropology  
\*Physics

Credit

#### Second Semester

CHEM 112  
Rhetoric  
\*Statistics (Applied)  
\*HUMDEV 370  
\*Perspectives in Nursing and Allied Health Sciences (Interdisciplinary Approach)

Credit

### Sophomore Year

#### First Semester

\*Human Anatomy and Physiology  
\*MICBIO 140  
\*PHIL 125 (Logic)  
\*Biochemistry  
\*PSYCH 101

Credit

#### Second Semester

\*Human Anatomy and Physiology  
SOCIO 101  
Humanities  
\*Principles and Skills Basic to Professional Nursing and Health Care of People

Credit

### Division of Public Health

The curriculum in Public Health designed to prepare students for health career opportunities or further study in environmental health, community health, and health education, health laboratory science, and medical technology. Students are expected generally follow the course sequences outlined below during their freshman year. minimum of 30 credits is required of students for the Bachelor of Science degree. Credits from other University departments are included in these major credits.

### ENVIRONMENTAL HEALTH

Designed to prepare for career opportunities in radiological health, industrial hygiene, environmental sanitation, occupational health, public health laboratory etc., or further study at the graduate level.

requiring specific technical knowledge and competence.

#### Freshman Year

| First Semester          | Credits |
|-------------------------|---------|
| RHET 100 or 110         | 3       |
| MATH 127 Calculus       | 3       |
| CHEM 111                | 3       |
| ZOO 101 (General)       | 3       |
| PSYCH 101 or SOCIOL 101 | 3       |
|                         | 15      |

| Second Semester         | Credits |
|-------------------------|---------|
| RHET 100 or 110         | 3       |
| MATH 128 Calculus       | 3       |
| CHEM 112                | 3       |
| ZOO 203                 | 3       |
| SOCIOL 101 or PSYCH 101 | 3       |
|                         | 15      |

\*May be taken either semester

If a language is elected, intermediate proficiency is required.

#### COMMUNITY HEALTH AND HEALTH EDUCATION

Designed to prepare the first level career opportunities in community health education, health services administration, health medical administration, health program development, epidemiology, health statistics, school health teaching, etc., or for further study at the graduate level requiring specific professional competence.

#### Freshman Year

| First Semester          | Credits |
|-------------------------|---------|
| RHET 100 or 110         | 3       |
| MATH 127 Calculus       | 3       |
| CHEM 111                | 3       |
| ZOO 101 (General)       | 3       |
| PSYCH 101 or SOCIOL 101 | 3       |
|                         | 15      |

| Second Semester         | Credits |
|-------------------------|---------|
| RHET 100 or 110         | 3       |
| MATH 128 Calculus       | 3       |
| CHEM 112                | 3       |
| SOCIOL 101 or PSYCH 101 | 3       |
| Elective                | 3       |
|                         | 15      |

\*May be taken either semester

\*With approval of advisor may take CHEM 101-102  
b an extra science or public health course will be required.

Elective chosen from Humanities.

If a language is elected intermediate proficiency is required.

#### MEDICAL TECHNOLOGY

The curriculum in medical technology consists of a three-year program followed by a 12-month internship in an accredited school of medical technology affiliated with the University.

After successful completion of the 12-month internship and after satisfying the requirements of the Division, a student will receive a Bachelor of Science degree in medical technology. A total of 130 academic credits is necessary for graduation with this option.

The few clinical facilities available for students in medical technology place limitations on the numbers of students who can major in medical technology. Consequently, beginning in January, 1974, with the class of 1978, students will not be admitted to the medical technology program until they have:

1) Completed a minimum of 48 credits including the course outlined below in the freshman year in the health laboratory sciences curriculum.

2) Registered for an additional 16 specified credits for the second semester of the sophomore year.

3) Submitted an application for admission to the Director of the medical technology program prior to March 1 of the year they wish to enter the program. (Applications are available from the Director of the medical technology program in the School of Health Sciences.)

Students are eligible for a major in medical technology in their junior year. Entering freshmen who express an interest in medical technology will be accepted in the Division of Public Health, School of Health Sciences as majors in the health laboratory science curriculum.

#### Freshman Year

| First Semester | Credits |
|----------------|---------|
| RHET 100*      | 3       |
| CHEM 111       | 3       |
| MATH 127**     | 3       |
| ZOO 101        | 3       |
| Elective*      | 3       |
|                | 15      |

| Second Semester | Credits |
|-----------------|---------|
| CHEM 112        | 3       |
| MATH 128        | 3       |
| RHET 110*       | 3       |
| Elective*       | 3       |
| Elective*       | 3       |
|                 | 15      |

\*Can be taken either semester

\*\*Precalculus mathematics (MATH 101, 102, and/or 103) available for students with elementary functions, and/or trigonometry.

#### HEALTH LABORATORY SCIENCE

Designed to provide a professional preparation in the general area of health laboratory science. Graduates are eligible for laboratory positions in hospitals, clinics, health departments, pharmaceutical firms and medical research foundations. Students completing this curriculum will also complete requirements established by the American Society of Clinical Pathologists for submitting applications to approved schools of medical technology offering clinical internships.

#### Freshman Year

| First Semester | Credits |
|----------------|---------|
| RHET 110*      | 3       |
| CHEM 111       | 3       |
| MATH 127**     | 3       |
| ZOO 101        | 3       |
| Elective*      | 3       |
|                | 15      |

| Second Semester | Credits |
|-----------------|---------|
| CHEM 112        | 3       |
| MATH 128        | 3       |
| RHET 110*       | 3       |
| Elective*       | 3       |
| Elective*       | 3       |
|                 | 15      |

\*Can be taken either semester

\*\*Precalculus mathematics (MATH 101, 102, and/or 103) available for students with elementary functions, and/or trigonometry

#### Department of Communication Disorders

The undergraduate Communication Disorders curriculum has a pre-professional orientation. Freshman and sophomore years are devoted primarily to the completion of the general University requirements. Junior and senior students receive training in the normal communicative processes, the disorders of speech and hearing, and the management of various problems. The program provides background for the student to attend advanced graduate training toward academic and clinical competence.

A minimum of 30 major credits is required of all students for the Bachelor's degree.



# School of Physical Education

The School of Physical Education includes the Departments of Exercise Science, Professional Preparation in Physical Education, Sport Studies and Athletics. It offers an undergraduate major in Physical Education and graduate programs in Exercise Science and Sport Studies. Other programs in the School include the general physical education program, the intramural sport program and the intercollegiate athletic program.

## GENERAL PHYSICAL EDUCATION PROGRAM

This program offers instruction in sport and other forms of physical activity to all students in the University.

One of the few certainties facing college graduates is that they will be continually faced with choices regarding physical activity. Burgeoning leisure time, increasing spectator interest in sport, increasing opportunity to participate in life-time sports such as golf, tennis, and bowling, as well as jogging and fitness programs, and increasing exposure to concern of medical people, particularly cardiologists, about inactivity, insure continued contact with the idea of physical activity and sport.

Some students enter the University with a background that enables them to fully appreciate and achieve satisfaction from participation in a sport and/or physical activity program. However, others are limited by insufficient preparation at earlier age levels. The General Physical Education Program offers: 1) the opportunity for self-assessment in terms of skill competencies and fitness components and 2) the opportunity to gain the ability to assess and interpret a wide variety of programs involving sport and physical activity as they relate to the individual's well-being.

The student has almost unlimited choice in selecting specific courses from those in sport skill and conditioning, as well as theoretical courses (classroom instruction and laboratory work) probing the "why" of sport and physical activity.

### Majors' Program

Departments within the School of Physical Education cooperatively offer a co-educational program for those students who wish to pursue physical education as a major. Students may elect to follow either the teacher education program or the related disciplines program which includes study in exercise science or

sport studies. The teacher education option offers further opportunity for specialization. A student may select a concentration in secondary education or elementary education. Similarly, concentrations available through the related disciplines program are exercise science and sport studies.

Each student is expected to select an area of concentration during the sophomore year. During the first two years of study, essentially the same for all majors, students fulfill the University core requirements and the physical education core requirements. The physical education core consists of the following courses:

| Courses                              | Credits |
|--------------------------------------|---------|
| EXC SCI 204 — Human Anatomy          | 3       |
| EXC SCI 205 — Kinesiology            | 3       |
| Prerequisite: Exc. Sci. 204          | 3       |
| EXC SCI 278 — Physiology of Exercise | 3       |
| Prerequisite: Zoology 135            |         |

A student will select three of the following four courses:

|                                                        |            |
|--------------------------------------------------------|------------|
| SPORST 200 — Sociology of Sport and Physical Activity  |            |
| Prerequisite: Sociol. 107                              | 3          |
| SPORST 201 — Psychology of Sport and Physical Activity |            |
| Prerequisite: Psych. 101                               | 3          |
| SPORST 202 — History of Sport and Physical Activity    |            |
| Prerequisite: History 100, 101, 150, or 151            | 3          |
| SPORST 203 — Philosophy of Sport and Physical Activity |            |
| Prerequisite: Phil. 105                                | 3          |
| Activity Courses                                       | *14        |
| <b>Total</b>                                           | <b>*32</b> |

\*Only 8 of the 14 credits in Activity Courses will generally be taken during the first two years. Thus the student actually completes 26 credits in the physical education core during the freshman and sophomore years.

The recommended program for these first two years of study is as follows:

### Freshman Year

| First Semester                | Credits |
|-------------------------------|---------|
| Elective (C, D, E) (Select 2) | 6       |
| ZOOL 101 Intro. Zool.         | 3       |
| P.E. Activity                 | 2       |
| RHET 100 or 110               | 3       |
|                               | 14      |

### Second Semester

Elective  
Electives (C, D, E) (Select 2)  
ZOOL 135 Intro. to Physiology  
P.E. Activity  
Rhetoric Elective

Electives: Soc. 101 (D), Psych. 101 (D), Hist. 100 or 1 (C), Phil. 105 (C). These are prerequisites to Physical Education Core Courses.

### Sophomore Year

First Semester  
EXC SCI 204 Human Anatomy  
\*SPORST 200, 201, 202, 203 (Select any 2)  
P.E. Activity  
Elective

Second Semester  
Elective  
EXC SCI 205 Kinesiology  
\*SPORST 200, 201, 202, 203 (Select any 1)  
P.E. Activity  
EXC SCI 278 Phys. of Ex.

\*The student must take 3 of these 4 courses during the sophomore year. They may be taken in any order provided the prerequisites have been met.

### Leisure Studies and Services

The professional in leisure services is a diagnostician of the leisure needs of people and a developer and provider of opportunities to meet these needs. He or she works primarily at the executive, administrative and supervisory levels, although a few settings involve more direct program leadership.

Options are available leading to a variety of careers in voluntary and youth serving organizations, college union, military establishments, municipal and other governmental agencies, and commercial and private enterprises; as well as in hospitals and other institutions and agencies dealing with the mentally retarded, emotionally disturbed, physically handicapped, and other types of dependents. An option in environmental interpretation includes suboptimal emphasizing natural history and environment, American history, archaeology, or natural resources planning and management, and outdoor education.

The curriculum presented below represents a core program. After becoming



## Division of Military and Air Science

familiar with the various career opportunities, the student and adviser select an appropriate current option or develop an innovative plan to fit unique goals. Recent examples of the latter include leisure services in the inner city, community resources for recreation, leisure services in correctional agencies, outdoor recreation, and outward bound leadership. In each case a coordinated group of courses totalling 15 credits is selected by the student and adviser to constitute the program.

The student majoring in Leisure Studies and Services is also encouraged to gain as much practical non-credit experience as possible through volunteer service, as well as part-time and seasonal employment in several settings and with varied types of participants.

### Freshman Year

| First Semester                      | Credits |
|-------------------------------------|---------|
| PS 101, Man and Leisure             | 3       |
| WRIT 100, Language and Writing, or  |         |
| WRIT 110, Language and Speaking     | 3       |
| Humanities & Fine Arts Elective (C) | 3       |
| Math. or Nat. Science Elective (E)  | 3       |
| Social Elective (D)                 | 3       |
|                                     | 15      |
| Second Semester                     | Credits |
| PS 111, Leisure Activity Analysis   | 3       |
| Rhetoric Elective                   | 3       |
| Humanities & Fine Arts Elective (C) | 3       |
| Math. or Nat. Science Elective (E)  | 3       |
| PSCH 101, Elem. Psychology (D)      | 3       |
| PS 103                              | 1       |
|                                     | 16      |

### Athletics

Members of the athletic department are responsible for the conduct and administration of the various phases of intercollegiate and intramural athletic programs.

### Air Science

The Department of Air Science offers courses of general interest to the University student and of specific interest to both male and female students who would like to prepare for and serve as officers on duty with the U.S. Air Force. This service may consist of either active duty with the regular forces or reserve duty with selected Air National Guard or U.S. Air Force Reserve units. The curriculum is designed to study the need for military forces, their nature, organization, and mission (with emphasis on the Air Force), and the nature of service as a professional Air Force officer. Courses encourage critical thinking, imagination, and a high degree of student involvement. Participation in the ROTC programs is voluntary. Uniforms and textbooks are provided. Students may register for ROTC courses at the same time they register for other University courses. No formal application is required.

The Department offers two separate programs designed to meet student needs, a four-year program for students desiring to learn more about the military, and a two-year program designed primarily for transfer students who have already decided to enter the military.

There are two major phases in the four-year program curriculum. The first phase is the General Military Course (GMC) which forms a single unit consisting of two courses offered during the freshman and sophomore years. The studies cover the nature and causes of international conflict, the functions and employment of U.S. military forces, and the historical development of air power. This first phase carries no service commitment and is an excellent way for students to study the military and decide if they want to continue on for an Air Force commission. Enrollment in the GMC confers no military status on the student. These courses meet for one classroom hour and one Corps Training hour per week.

In the summer between the sophomore and junior years, students who have decided to continue the program and are selected for entry attend a four-week field training session at an Air Force installation.

The second phase of the four-year program is the Professional Officer Course (POC) taken during the junior and senior years. Enrollment depends

upon academic and medical qualification and selection by the department. In the POC, academic concentration is on preparation for service as an Air Force officer, and deals with defense policies in the contemporary world, civil-military relations, Air Force leadership at the junior officer level, military management, and military law. The development of communicative techniques is also an integral part of the POC curriculum. POC classes meet for 3 classroom hours and 1 Corps Training hour per week.

The two-year program requires that the student have two academic years remaining at either undergraduate or graduate level. Successful completion of a six-week program on a military installation during the summer prior to enrollment is a prerequisite for these students. Those interested should apply no later than one academic semester before enrollment, since processing for the summer training must be completed as soon as possible. The two-year program is available to transfer students and students unable to participate in the four-year program. After enrollment, the two-year student receives the same instruction as a four-year member.

Corps Training is a non-academic, cadet-planned and directed activity. It focuses on military customs and courtesies, the career environment of the Air Force officer, and practical experiences in leadership and management.

Field Training involves a practical, first-hand experience with military life on an Air Force installation. Cadets receive instruction on junior officer activities, career field orientation, Air Force base functions and environment, aircraft and aircrew orientation, survival training, and physical conditioning. Applicants for the two-year program also receive academic instruction on subjects normally covered during the GMC portion of the four-year program.

The department offers to qualified students scholarship assistance which pays university tuition, fees, textbook allowance, and lab expenses, plus a stipend of \$100 per month. High school seniors compete on a national basis for scholarships starting in the freshman year.

Qualified students interested in becoming military pilots may participate in the Flight Instruction Program. Completion of this program leads to pilot qualification for later advancement to

Air Force pilot training. In addition to actual flight instruction, students take ground instruction in weather, navigation, and FAA regulations.

Students with previous military training may have this experience credited toward all or part of the first two years of the four-year program. Individuals with prior active service, previous ROTC training, military school attendance, Civil Air Patrol training, or service academy attendance should consult the department.

Successful completion of the Air Force ROTC program results in the awarding of a commission as a Second Lieutenant in the U.S. Air Force. In their senior year, students may request a delay in reporting to active duty in order to complete graduate work or to attend professional school. Students who are interested in obtaining further information may inquire at Dickinson Hall or telephone (413) 545-2437 / 2451.

#### Freshman Year

| First Semester       | Credits |
|----------------------|---------|
| Air Science 111      |         |
| The U.S. Air Force   | 1       |
| Second Semester      | Credits |
| Air Science 112      |         |
| U.S. Military Forces | 1       |

#### Military Science

The Department of Military Science offers a two- and four-year Reserve Officers Training Corps (ROTC) program which is voluntary and open to eligible, regularly enrolled men and women students of the University. Enrollment in departmental courses for credit is open to all members of the University community. Students who have completed a four-year program or equivalent are eligible for a commission in the U.S. Army upon graduation.

The four-year program consists of the Basic Course (freshman and sophomore years) and the Advanced Course (junior and senior years). Basic Course students are taught Contemporary Military Theory and Basic Military Leadership and Management. Students may register for military science courses at the same time they register for other University courses. No formal application is required. Basic Course cadets may terminate ROTC enrollment at any time in accordance with University policy with-

out obligation to the U.S. Government or to the Army.

Following successful completion of the Basic Course, qualified cadets may enroll in the Advanced Course. Advanced Course students are taught Military Law, Contemporary Military Theory, Organization of the Department of Defense and the Armed Forces, and Advanced Leadership and Management. The Advanced Course, under the two-year program, is also open to graduate students, transfer students, and other students who otherwise were unable or had not elected to participate in the four-year program. Applicants for the two-year program are encouraged to apply as early as possible during the year prior to entering the program.

Students with previous military training may receive advanced placement in the ROTC program. Individuals with prior active service, previous ROTC participation, or military school attendance should consult the department on the matter of constructive credit toward ROTC.

In addition to classroom activities, all regularly enrolled ROTC cadets participate in a leadership laboratory comprised of two field practicums each semester, designed to allow the student to apply theory learned in the classroom. \*Following the junior year, each cadet attends a six-week Advanced ROTC Summer Camp at Fort Bragg, North Carolina, for intensive training in military leadership. Selected students may opt to attend the U.S. Army Ranger School at Fort Benning, Georgia, in lieu of attendance at the Advanced ROTC Summer Camp.

Scholarship assistance consisting of University tuition, fees, textbook allowances, lab expenses and a grant of \$100 per month are offered to qualified students for one, two and three years. Non-scholarship Advanced Course cadets receive a grant of \$100 each month during the junior and senior years.

Various extracurricular activities exist for interested cadets. Qualified students may participate in the Flight Instruction Program leading to pilot qualification in Army Aviation. Students may also participate in confidence building activities such as rappelling, rubber boat exercises, mountain climbing, orienteering and cold weather survival on a voluntary basis.

Upon completion of University degree requirements and military science

requirements, cadets normally receive Reserve Commission as Second Lieutenants in the U.S. Army and are required to serve from three months to two years active duty. Scholarship cadets serve four years. Cadets designated as Distinguished Military Students as a result of achievements in academic and military studies may apply for a commission in the Regular Army. An attempt is made to closely correlate the academic discipline with the Army Branch of assignment.

In their senior year, cadets may request a delay on reporting to active duty for up to two years in order to complete graduate or professional studies. Programs are available in such fields as law and medicine which lead to commissions in the Judge Advocate General's Medical Corps following professional schooling.

Students who are interested in obtaining further information may inquire at the Department of Military Science, Dickinson Hall, or telephone (413) 545-2321/2322.

\*Student health insurance is required for participation in the Leadership Laboratory.



## Graduate School

Graduate work leading to the Doctor of Philosophy degree may be taken in the following fields: Animal Science, Anthropology, Astronomy, Biochemistry, Botany, Business Administration, Chemical Engineering, Chemistry, Civil Engineering, Communication Disorders, Communication Studies, Comparative Literature, Computer & Information Science, Economics, Electrical & Computer Engineering, English, Entomology, Environmental Engineering, Food & Agricultural Engineering, Food & Resource Economics, Food Science & Nutrition, Forestry & Wood Technology, Geology, History, Human Movement, Industrial Engineering & Operations Research, Linguistics, Mathematics, Mechanical Engineering, Microbiology, Ocean Engineering, Physics, Plant Pathology, Plant Science, Political Science, Polymer Science & Engineering, Psychology, Sociology, Soil Science, Wildlife & Fisheries Biology, and Zoology.

A cooperative Ph.D. program involving Amherst, Hampshire, Mount Holyoke, and Smith Colleges and the University is also available in the

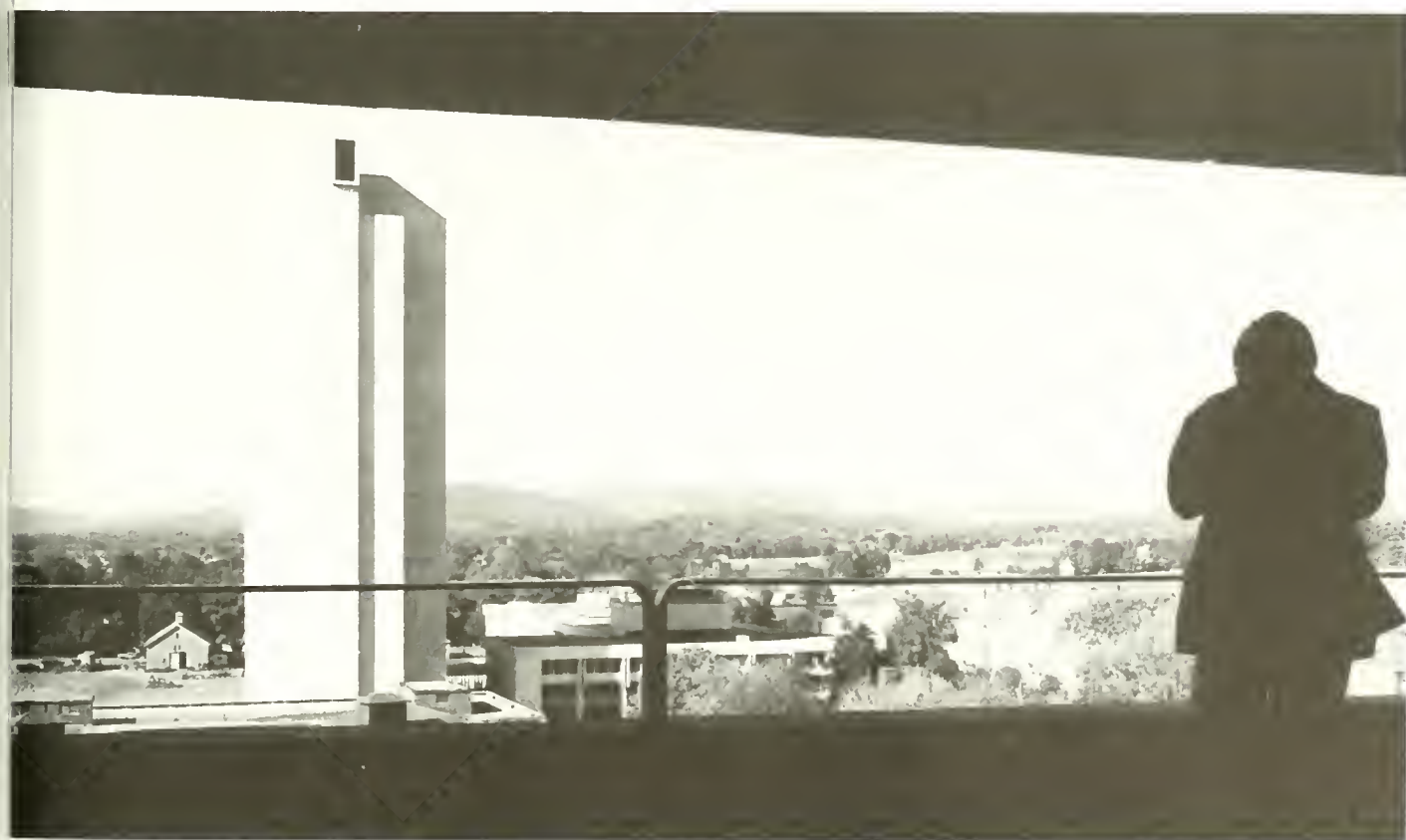
departments of Biochemistry, Botany, Chemistry, French, Geology, Germanic Languages & Literatures, Microbiology, Philosophy, Physics, Spanish & Portuguese, and Zoology.

The School of Education offers several specialized programs leading to the Doctor of Education degree for those employed in the educational field. The requirements for this degree follow closely those outlined for the Doctor of Philosophy.

Master's degrees are offered in the following areas: Animal Science, Anthropology, Art, Art History, Astronomy, Biochemistry, Botany, Business Administration, Chemical Engineering, Chemistry, Civil Engineering, Classics, Communication Disorders, Communication Studies, Comparative Literature, Computer & Information Science, Economics, Education, Electrical & Computer Engineering, English, Entomology, Environmental Engineering, Fine Arts (Art, English, or Theatre), Fisheries Biology, Food & Agricultural Engineering, Food & Resource Economics, Food Science & Nutrition, Forestry & Wood

Technology, French, Geology, Germanic Languages & Literatures, History, Home Economics, Hotel, Restaurant & Travel Administration, Industrial Engineering & Operations Research, Labor Studies, Landscape Architecture, Linguistics, Manufacturing Engineering, Marine Sciences, Mathematics, Mechanical Engineering, Microbiology, Music, Nursing, Ocean Engineering, Philosophy, Physical Education, Physics, Plant & Soil Sciences, Plant Pathology, Political Science, Polymer Science & Engineering, Psychology, Public Administration, Public Health, Regional Planning, Slavic Languages & Literatures, Sociology, Theatre, Wildlife Biology, and Zoology.

HOLDERS of undergraduate degrees desiring further information may request a Graduate School Bulletin and application materials by writing to the Graduate Admissions Office, Graduate Research Center, University of Massachusetts, Amherst, MA 01002.





## DIRECTORY OF COURSES

## COLLEGE OF ARTS AND SCIENCES

THIS DIRECTORY lists offerings available in each college, school, division, and department. Students should consult the index for the general fields under which specific courses may be found.

### SUMMARY OF THE COURSE NUMBERING SYSTEM

000-099 Non-credit courses with no quality-point value toward graduation (such as courses needed to make up entrance deficiencies).

100-199 Undergraduate credit only: freshman-sophomore level.

200-399 Undergraduate credit only: junior-senior level.

400-499 Professional courses open to students having the bachelor's degree.

500-699 Courses available for graduate credit.

700-999 Graduate level courses.

Under normal circumstances, undergraduate students will be concerned only with courses numbered below 400. Students interested in the University's program of graduate studies should consult the *Graduate School Bulletin*.

The following numbers are assigned to special courses and academic activities:

190, 290, 390 New undergraduate courses being taught on experimental basis — not listed in catalog.

|         |                                  |
|---------|----------------------------------|
| 385-386 | Special Problems, Undergraduate. |
| 391-397 | Seminars, Undergraduate.         |
| 398-399 | Departmental Honors.             |
| 700     | Special Problems, Graduate.      |
| 800     | Master's Thesis.                 |
| 900     | Doctoral Dissertation.           |

Roman numerals indicate the semester(s) in which a course is given.

Capital letters appearing in parentheses after course titles designate various categories of courses required for graduation. See the first section of this book for a full explanation of graduation requirements.

**NOTE:** All regular semester courses meet for three class hours each week unless otherwise indicated; all courses carry three credits unless otherwise indicated. Courses carry no prerequisites unless specified.

Dean Alfange, Jr., Dean, Faculty of Social and Behavioral Sciences; Jeremiah M. Allen, Dean, Faculty of Humanities and Fine Arts; Seymour Shapiro, Dean, Faculty of Natural Sciences and Mathematics; James W. Shaw, Associate Dean, College of Arts and Sciences; Edward Chang, Julia A. Fata, Harry Schumer, and James L. Wozniak, Assistant Deans, College of Arts and Sciences.

The College of Arts and Sciences consists of three Faculties with a common curriculum. Departments and programs within each Faculty are as follows:

**Humanities and Fine Arts** — Afro-American Studies, Art, Asian Studies, Classics, Comparative Literature, English, French and Italian, Germanic Languages, History, Linguistics, Music, Philosophy, Slavic Languages, Spanish and Portuguese, and Theater.

**Social and Behavioral Sciences** — Anthropology, Communication Studies, Economics, Political Science, Psychology, and Sociology.

**Natural Sciences and Mathematics** — Biochemistry, Botany, Chemistry, Computer and Information Science, Geology and Geography, Mathematics and Statistics, Microbiology, Physics and Astronomy, Polymer Science and Engineering, and Zoology.

The College has programs of study leading to four bachelor's degrees: Bachelor of Arts, Bachelor of Science, Bachelor of Fine Arts, and Bachelor of Music. All departments (except Linguistics, Computer and Information Science, and Polymer Science and Engineering) offer a program leading to the B.A. degree. In addition to the customary departmental majors, interdisciplinary majors or programs are provided in Classics and Philosophy, Journalistic Studies, Judaic Studies, Linguistics and Chinese, Linguistics and German, Linguistics and Japanese, Linguistics and Philosophy, Linguistics and Russian, Mathematics and Philosophy, Near Eastern Studies, Pre-dental, Pre-medical and Pre-veterinary Studies, Science, Social Thought and Political Economy, and Soviet and East European Studies. Certificate Programs are available in Asian Studies, General Language Interpretation, Latin American Studies, and Western European Area Studies, which do not constitute majors, but are offered for students with particular interest in these areas. The B.S. degree may be earned only if the major is in natural sciences and mathematics, science, psychology, pre-dental, pre-medical, or pre-veterinary studies. The B.F.A. programs have a strong emphasis in art and the B. Mus. programs reflect an emphasis in music. All degree programs combine a basic proficiency or experience in communication skills and a study in depth in one area with supporting study in the other two of the three main divisions of learning represented by the three Faculties.

Courses appropriate to the communicative skills and distribution requirements in the three areas are noted in University Bulletins

by the respective codes (B), (C), (D), and (E).

A program of study which conforms with the following eight provisions qualifies the student who completes it for the appropriate degree. Advanced placement and transfer credits may be applied toward any or all of these qualifications, but at least half of the major program must be completed in residence.

1. At least 120 credits (Core Requirement A).

2. Rhetoric (Core B): Two "B" courses required, one of which must be either Rhetor 100 or 110.

3. Foreign Language: For the B.A. and B.S. degrees only, a basic proficiency or experience with foreign language must be demonstrated by (a) completion of a foreign language course at the 140 level, (b) score of 600 or above on a CEEB achievement test while in high school or placement test at UMass, (c) satisfactory completion in high school of fourth-level foreign language course or third-level course in one foreign language and a second-level course in another, (d) a year in high school in which English is not the basic language of instruction, (e) substitution of language-related study with proper authorization (see CASIAC).

4. Humanities and Fine Arts (Core C): Four "C" courses for B.A.; three "C" courses for B.S., B.F.A., B. Mus.

5. Social and Behavioral Sciences (Core D): Four courses, three of which must be "D" for the B.A.; three "D" courses for B.S., B.F.A. and B. Mus.

6. Natural Sciences and/or Mathematics (Core E): Four "E" courses for B.A., B.S.; three "E" courses for B.F.A. and B. Mus.

7. For a B.S. degree, the major must be in Natural Sciences and Mathematics, Science, Psychology, Pre-dental, Pre-medical or Pre-veterinary Studies; and a minimum of 60 credits must be earned in courses in Natural Sciences and Mathematics or Psychology, or courses in other areas that are E-designated.

8. An approved major program must be completed.

Full-time students with majors in the College are eligible to use a pass/fail option in one course each semester and in those summer sessions in which they enroll for at least six credits. University regulations restrict exercise of the option to a maximum of five courses completed in satisfaction of University core requirements, but the College permits its use in those courses presented in satisfaction of its additional requirements. Exercise of the option in courses required for a student major is subject to permission of the Department.

College of Arts and Sciences  
courses

- AS 100. Preparation for Foreign Language Study  
AS 101. Study Skills Credit, 2  
AS 102. Freshman Seminar (Natural Sciences)  
AS 103. Freshman Seminar (Social Sciences)  
AS 104. Freshman Seminar (Humanities)  
AS 110. Mathematics in Spanish

- Credit, 2.  
AS 298, 299. Special Topics\* Credit, 1-3.  
Humanities and Fine Arts courses:

- FA 298, 299. Special Topics\* Credit, 1-3.  
Social and Behavioral Sciences courses:

- BS 298, 299. Special Topics\* Credit, 1-3  
BS 300. Social Problems and Community Service I (fall semester) Credit, 6.  
BS 301. Social Problems and Community Service II (spring semester) Credit, 6.  
BS 302. Social Problems and Community Service III (summer session)  
BS 391. Problems in Social & Behavioral Sciences (ACTION program) (Fall semester) Credit, 12.  
BS 392. Problems in Social & Behavioral Sciences (ACTION Program) (spring semester) Credit, 12.  
BS 393. Problems in Social & Behavioral Sciences (ACTION Program) (summer session) Credit, 6.

Natural Sciences and Mathematics courses:

- M 298, 299. Special Topics\* Credit, 1-3.

\*Seminars, experimental courses, special laboratory experience and/or directed individual investigation by students in their sophomore and junior years, with courses in the specific areas of Humanities, Social Sciences, and Natural Sciences. Prerequisite: approval of the appropriate Dean, following consultation with the College Curriculum Committee or subcommittee thereof.

Humanities and Fine Arts

W.E.B. Dubois Department of  
Afro-American Studies

Chairman of Department: Associate Professor John H. Bracey Jr.; Associate Chairman: Associate Professor Chester Davis; Professors: J. Cole, Harrison; Associate Professors: R. Cole, Shepp, Stevens, Strickland, Thelwell, Terry; Assistant Professor: Austin, Afesi Mkalimoto; Instructors: Miles, Ramos; Visiting Professors: Achebe; Visiting Lecturer: Lester; Adjunct Professors: Kaplan, Roach, Boyer, Ford.

A major in Afro-American Studies is offered. Specific requirements may be obtained by contacting Associate Chairman Davis.

101. INTRODUCTION TO BLACK STUDIES: OVERVIEW (D)

An interdisciplinary introduction to the basic concepts and literature in the disciplines covered by Black Studies. Includes history, the social sciences, and the humanities as well as conceptual framework for investigation and analysis of Black history and culture.

102. INTRODUCTION TO BLACK STUDIES: RESEARCH & WRITING (D)

An introduction to basic research methods; including library use, project development, notes, and bibliographies, and writing research papers. Strongly recommended for entering Freshmen.

111. SURVEY OF AFRICAN ART (C)

The literature on African art and an analysis of the theoretical basis for its study and of the distinguishing characteristics of its major traditions. An historical survey of Black art from prehistoric times (5000 B.C.) to the European arrival.

112. INTRODUCTION TO CLAY AND PLASTER

Basic techniques and conceptualizations in traditional African and Afro-American sculptural forms, e.g., masks, icons, busts. Relation of clay, plaster and plastics to metal sculpture.

131. AFRICAN HISTORY: 300 A.D. TO EUROPEAN COLONIZATION (C)

The history of Africa including its natural environment, the development and basic characteristics of African culture, the major African civilization from 300 A.D. to European penetration, the slave trade and its impact on African and European cultures.

132. AFRO-AMERICAN HISTORY: 1619 TO THE CIVIL WAR (C)

The development, organization, practice and consequence of slavery and an historical survey of the American scene covering ten phases: beginning with the Revolutionary Era and the paradox of slavery amidst the struggle for American political freedom.

133. AFRO-AMERICAN HISTORY: RECONSTRUCTION TO THE PRESENT (C)

Major issues and actions from the end of the Civil War to the rise of the Black Power movement. Political and social history includes Blacks in Reconstruction governments, labor, education, migrations, urbanization and political organizations and movements.

135. AFRICAN HISTORY: COLONIALISM TO THE RISE OF INDEPENDENT AFRICAN STATES (C)

Survey history of West and Central Africa from the incursion of colonialism to the present period of independent states. Particular attention to political and economic development as well as current internal and external problems. Continuation of AFROAM 131; may be taken immediately.

151. CULTURE AND LITERATURE (C)

The relevant forms of Black cultural expression contributing to the shape and character of contemporary Black Culture: the literary application of these in traditional Black writers. In four parts: 1) West African cultural patterns, and the Black past; 2) the transition — slavery, the culture of survival; 3) the culture through the literature; and 4) Black perceptions vs. White perceptions.

152. BLACK RHETORIC (B)

The social and psychological implications of the adoption of English as a completely alien language. Development of the dialect, forms of expression necessitated by conditions of slavery; use of the Bible as a model for Black rhetoric; the development of the sermons; evolution of the language of Black politics; and the use of satire as a means of communication.

155. REVOLUTIONARY CONCEPTS IN AFRO-AMERICAN MUSIC I (C)

Introduction to the history of Black music from its African origins to the end of the 19th century. Discussion of styles, characteristics, and instrumentation in early African music and moves to development of New World forms from early religious expression to the beginning of the blues.

156. REVOLUTIONARY CONCEPTS IN AFRO-AMERICAN MUSIC II (C)

African-American music from the beginning of the 20th century to the present. Development of blues forms through jazz, swing, bebop, etc. Special attention to Louis Armstrong, Duke Ellington, Charles Parker and other leading figures in Black American music.

161. INTRODUCTION TO POLITICAL SCIENCE — 20TH CENTURY (D)

The role of Black Americans in political theory and movements in the United States. Traces the development of Black political



thought and organization up through the 20th century, beginning with DuBois and including such movements as the Niagara and Garvey Movements and Islamic Nationalism. The development of political institutions within the Black community.

**211. AFRO-AMERICAN TEXTILE DESIGN AND FABRIC PRINTING**

Uses motifs that relate to both African and Afro-American cultural experiences. Includes structuring and organizing designs for reproduction on dress and furnishing fabrics and techniques involved in production.

**212. SCULPTURE: WELDED SHEETMETAL**

Introductions to forms and techniques of African masters and Afro-American adaptations in metal sculpture. Aesthetic and conceptual problems. Work primarily in brass, copper and steel.

**213. AFRO-AMERICAN ART HISTORY (C)**  
Visual expression in the Black diaspora (United States, Caribbean, and Latin America) from the early slave era and early Black masters to the present. The era of slave art, the Colonial period, the Black Renaissance, and developments in Black art since the 1930s.

**214. THE EVOLUTION OF VOCAL AND INSTRUMENTAL AFRICAN-AMERICAN MUSIC (C)**

Development of form and style in the vocal and instrumental music of the African-American, from the African roots to contemporary times. Class includes experimental vocal/instrumental ensembles.

**215. AFRO-AMERICAN DANCE THEATER WORKSHOP I**

Beginner's class in Afro-American dance technique. Includes: 1) working methods and dance skills; 2) lectures and demonstrations using films, videotapes, slides, and visiting dancers from Black dance companies; and 3) selected literature on the dance.

**216. AFRO-AMERICAN DANCE THEATER WORKSHOP II**

Intermediate class. Emphasis on performance techniques and improvisational methods within framework of movement stylizations and language, which flows from and reflects movement and rhythmic patterns common to Black communities, e.g., walking, social dancing, body attitudes during conversations, etc. Prerequisites: AFROAM 215 or permission of instructor.

**217. CONTEMPORARY BLACK IMAGE MAKING (C)**

Graphic communication and its relation to the cultures, world view institutions, and value creation and transmission of African and non-African societies. Contemporary examples

related to Afro-American society. Some studio work in painting, print processes, charcoal, pencil drawing, and experimental media.

**218. BLACK MUSIC AND THE THEATER**  
Workshop in composing, arranging and performing music for Black theater. Involves work with faculty members in theater in creating a musical score for a play. Prerequisites: Ability to play a musical instrument, passable skill in reading music and some knowledge of scales, chords, and harmony.

**219. VOICES OF NEW AFRICA HOUSE CHOIR**

Preparation and performance of choral music in the Black tradition, i.e., spirituals, gospels, worksongs, chants, hollers, etc. Credit, 1.

**220. CONTEMPORARY BLACK URBAN EDUCATION (D)**

Present conditions of education for Black children in northern, urban schools. Social science assumptions which influence education, (e.g., Coleman, Moynihan, Jencks, Jensen), integrated vs. all-Black public schools, the "innovation" movement, and independent Black community schools.

**221. CULTURES OF WEST AFRICA (D)**

A survey of the social, political, economic, and religious patterns of the traditional cultures of West Africa. The problems of continuity and change with these societies and their consequences.

**222. THE BLACK CHURCH IN AMERICA (C)**

The church as a continuing and powerful institution among Black Americans. The role of the church during different periods of history; functional interpretation of religion among Afro-Americans, and analysis of various types of Black churches.

**223. AFRO-AMERICAN PEOPLE (D)**

An analysis of the culture of Black people in the United States, definitions of Black culture, retention of Africanisms, language in relation to culture, the arts, the position of religion and the Black church, political movements and economic institutions as regards Black culture.

**224. ECONOMIC PROBLEMS OF BLACK PEOPLE**

Critical areas in the economic progress of the Black community; an historical analysis providing a broad framework for understanding of current problems.

**225. SOCIAL ACTION**

Theory and fieldwork in local urban Afro-American communities. First-hand examination of social problems, community organizations, and conventional service agencies in the Springfield area.

**226. DOUBLE JEOPARDY: AUTOBIOGRAPHIES OF BLACK WOMEN (C)**

The role of the Black woman in her community, and her struggle against oppression and racism in the larger society.

**227. RACISM AND AMERICAN SOCIAL ANALYSIS (D)**

The uses and interpretations of race in traditional analysis of American political and social history. The role of intellectuals as both advocates and adversaries of racist theories. American scholarship in the universities.

**228. TECHNIQUES IN AFRO-AMERICAN RITUAL: ACTING WORKSHOP**

Black theater workshop designed to explore content of Afro-American experiences as reference for the development of acting skill. Focus on ritual techniques, character definition, and choral movement/song.

**231. LIFE AND WRITINGS OF W.E.B. DUBOIS**

The life and works of W. E. B. DuBois, "Father of Pan-Africanism," and his influence on the political thought of Black Americans.

**232. HISTORY OF BLACK NATIONALISM**  
Black Nationalism from the Nationalist Movement of the 1870's to the present.

**233. AFRO-AMERICAN SLAVERY**

Examines important questions concerning slavery in the United States with some comparisons with slavery in Latin America. Identifies important ideological forces which helped determine the character of the literature on the subject. Prerequisites: AFROAM 132, or permission of instructor.

**234. THE HARLEM RENAISSANCE (C)**

The Black literary and artistic movement of the late 19th and early 20th centuries and coming together of Black intellectuals around the idea of Blackness in the Harlem of the 1920s. Examination of the writings of Langston Hughes, Claude McKay, W. E. B. DuBois and others.

**235. BLACK SOCIOLOGICAL THOUGHT (D)**

The classic works written by Black sociologists such as DuBois, Frazier, Charles Johnson, Allison Davis, Drake and Clayton and Oliver C. Cox. The various viewpoints, underlying assumptions, place in the American sociological tradition, and theoretical contribution to an understanding of the Black Experience. Prerequisite: SOCIOL 101.

**251. BLACK DRAMA (C)**

Investigation of the problems of aesthetics in Black drama through a close study of representative plays covering the period from the 1920s to the late 1960s. Also an examination



published criticism by both White and Black drama critics.

22. **BLACK IMAGES IN WHITE AMERICAN WRITINGS (C)**  
Critical survey of White attitudes toward Black people as reflected in the national literature from colonial times to the present. Includes works of Poe, Emerson, Thoreau, Melville, O'Neill, Hemingway and Faulkner.

23. **PRE-CIVIL WAR BLACK WRITING (C)**  
Examination of the variety, range, and content of Black literary expression in the period between 1776 and 1866 through the study of novels, a play, poetry, autobiographies, appeals and defenses. Attention to attitudes toward their cultural and social positions of both slaves and free Blacks.

24. **CONTEMPORARY AFRICAN NOVELS (C)**  
Cultural foundations of West African literature and the study of representative contemporary novelists of both English and French West Africa (Chinua Achebe, Amos Tutuola, Cyprian Ekwensi, and others).

25. **BLACK THEATER IN THE AFRICAN CONTINUUM (C)**  
Exploration into African philosophy and religion as the index which best defines the aesthetic logic of African-American drama. Examination of traditional African cultural values and practices within that context and identification of their relation to the development of formal and informal dramatic expression as a part of the African-American cultural experience.

26. **PRACTICUM IN PRISON EDUCATION**  
Organized into interdisciplinary teams, students work with inmates in a Massachusetts Correctional Institution as resource persons and instructors in Black literature, history, and culture. Prerequisite: upperclass standing, permission of instructor. Credit, 6.

27. **THE CONTEMPORARY AFRO-AMERICAN NOVEL: RICHARD WRIGHT TO ISHMAEL REED (C)**  
The novels of Afro-American writers from the publication of Wright's *The Outsider* (1953) to Ted's *Mumbo Jumbo* (1972). These works and others such as Ellison's *Invisible Man* will be looked at in terms of the variety of techniques and methods used to examine the Black and American experiences.

28. **REVOLUTION IN THE THIRD WORLD (D)**  
The nature of the revolutionary process in Third World countries. Russia, China, Cuba, Vietnam and Guinea Bissau. An attempt to identify the social, economic, political and

cultural factors which advance or retard this process.

262. **WRITINGS OF FRANTZ FANON (D)**  
In-depth examination of Fanon's analysis of colonialism and his contribution to understanding of revolution and political action. Includes his concept of Negritude, participation in Algerian revolution, involvement with European liberal left, and search for his own identity through struggle.

263. **PAN-AFRICANISM AND THE THIRD WORLD**  
Survey of the history of Pan-Africanism through its roots in the West Indies to its manifestations in England, the United States, and the Conferences of 1954. Examines the politics of the "nonaligned" or neutralist countries under the leadership of such statesmen as Nehru, Tito, and Nasser, and the politics of the Third World Nation States.

264. **FOUNDATION OF BLACK EDUCATION IN THE UNITED STATES (C)**  
A critical examination of the political, economic, and social forces which have shaped the course of education for Black people in the United States from the Reconstruction period to the present.

265. **SEMINAR IN BLACK CULTURE**  
Similarities and differences in the culture of Black folks in West Africa, the Caribbean and the United States. Following background lectures on African and Afro-American anthropology, each student makes a presentation based on comparative research on a selected aspect of Black culture. Prerequisites: AFROAM 221 and 223 or permission of instructor.

310. **TOPICS IN THE BLACK CREATIVE ARTS**  
Seminar/workshop for upper level students. Research in selected areas of the creative arts (e.g., music, dance, theater, plastic arts) utilizing primary and secondary sources, field tapes, oral sources, discographies, videotapes, etc. Students prepare paper or equivalent.

311. **AFRO-AMERICAN DANCE III: CONTEMPORARY TECHNIQUES**  
New and experimental techniques in contemporary Black choreography and body language. Combining elements of dance and drama into a unified form. Students choreograph short work.

312. **AFRO-AMERICAN DANCE IV: COMPOSITION IN BLACK THEATER DANCE**  
Advanced course. Continuation of 311. Emphasis on composition and choreography.

330. **RESEARCH IN AFRO-AMERICAN HISTORY (C)**

An introduction to historical research through use of primary sources, bibliographies and other reference tools, including local sources, oral and written. Prerequisites: AFROAM 132, 133, Junior-Senior standing.

331. **READINGS IN AFRO-AMERICAN HISTORY**

Selected topics in Black social and political history, e.g., slavery, reconstruction, free Blacks, protest movements, etc. Extensive reading in the secondary literature to familiarize the students with problems of historical analysis and interpretation. Prerequisites: AFROAM 132, 133, Junior-Senior standing.

332. **READINGS IN AFRICAN HISTORY**

Selective topics in African social and political history. Specific topics dictated by the interest of the students in a given semester, e.g., 20th century African leaders, African Socialism, etc. Extensive reading in the secondary literature to familiarize students with various problems of historical analysis and interpretation. Prerequisites: AFROAM 131, 135, Junior-Senior standing.

363, 364. **PAN-AFRICANISM: STRUGGLES FOR LIBERATION AND INDEPENDENCE**

Offered for two semesters (one year). Analyzes the realities of the liberation struggle for African peoples. An in-depth examination of the writing of Pan-Africanists and a critical analysis of the revolutionary thrust toward independence and the unification of the African continent.

385. **SPECIAL PROBLEMS**

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

386. **SENIOR THESIS**

Afro-American Studies majors only.

398. **SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4

399. **SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Art

Chairman of Department: Professor George M. Wardlaw; Professors: Becker, Benson, Coughlin, Friedmann, Kamys, Mallary, Matheson, Norton, Perkins, Reed, Roskill, Roy, Wang; Associate Professors: Berube, Cheney, Davies, Gongora, Grillo, Hendricks, Krumm, Paston, Schieppi, Stevens, Town-

send, Wozniak; Assistant Professors: Brown, Denny, Dube, Feingold, Giesman, Harbison, Hopkin, Kearns, McGee, Mochon, Parks, Patterson, Tartakov, New-Smith; Lecturers: Kaprow, Phillips.

Freshmen studio art majors must begin by taking ART 100, 120, and an art history course (111, 113, or 117) to be followed in the next term by ART 102, 122, and another art history course. After these foundation courses, students begin to explore the various areas of the department: printmaking, ceramics, painting, sculpture and design. For specific Departmental Requirements for the four years, students should contact the Director of Undergraduate Studies in Art. The sequence of courses is available in checklist form in that office.

There are additional Departmental Regulations with which all students must comply (e.g. Special Problems Contract, etc.). These regulations are available in written form in the Undergraduate Art Office. Although not included as part of the course descriptions, field trips may be required in certain courses at the discretion of the instructor.

## CREATIVE ART

### 100. BASIC DRAWING (C)

Drawing in black and white, applying pencil, crayon, charcoal techniques to representation in line and tone, emphasizing sound observation and effective presentation. 6 studio hours.

### 102. DRAWING COMPOSITION (C)

Continuation of ART 100. Emphasis on pictorial composition and advanced drawing techniques. 6 studio hours.

### 104. BASIC STUDIO (C)

Non-art majors ONLY. Introduction to visual concepts through a combination of formal presentations and laboratory experiences. Emphasis on developing understanding of divergent points of view in Art rather than the development of skills or creative accomplishments. 6 class hours. Not permitted for Art majors for credit.

### 120. BASIC DESIGN I (C)

Two-dimensional design concepts arising out of work with specific problems in a variety of media. 6 studio hours.

### 122. BASIC DESIGN II (C)

Continuation of ART 120. Specific three-dimensional problems, stressing the interrelationship of materials, processes, techniques, and sculptural concepts. Prerequisite, ART 120. 6 studio hours.

### 210. INTERIOR DESIGN I

Introduction to graphics, interior layouts, normative and descriptive elevations. 2- and 3-point perspective drawing, architectural

measurement and theory of proportion. Prerequisites: ART 100 and 120, or permission of instructor.

### 211. INTERIOR DESIGN II

Advanced elevations, layouts and perspective; freehand perspective, theory of color, light. Prerequisite: ART 210 or permission of instructor.

### 215. HISTORY OF DECORATIVE ARTS

Historical orientation in the development of styles in decorative arts. The causes and factors behind cultural exchange and the formation of aesthetic preferences. The historic development of furnishings and decorative arts.

### 217. APPLIED DESIGN

An advanced course in which the elements and principles of design are employed to solve a series of specific design problems. A variety of media required. Prerequisites: ART 100 and 120.

### 219. TEXTILES FOR THE INTERIOR

Basic factors related to durability, maintenance, appearance, appropriateness, performance and cost of textiles used in residential, commercial and public interiors. Prerequisites: ART 100 and 120.

### 220. PAINTING I (C)

Easel painting in oil related media, based on elementary understanding of physical properties of medium, and encouraging individual directions within limitation of sound composition. Prerequisites, ART 100 and 120. 6 studio hours.

### 222. PAINTING II (C)

Initial concentration on transparent water color, emphasizing control of techniques and mastery of color relationships. Further experience with opaque water color, such as gouache, casein. Prerequisites: ART 100 and 120. 6 studio hours.

### 224. PAINTING III

Continuation of ART 220. Prerequisite; ART 220. 6 studio hours.

### 226. PAINTING IV (Techniques and Materials)

Advanced work in traditional and contemporary painting techniques and media. Includes encaustic, tempera, oil, oil-resin, acrylic polymer, synthetic media, grounds and supports. 6 studio hours. Prerequisites: ART 222, 224.

### 230. ADVANCED DRAWING

Investigation and development of various techniques and media with special emphasis on figure drawing. Prerequisites, ART 100 and 102. 6 studio hours.

### 232. ADVANCED DRAWING PROBLEMS

Advanced work in traditional and contempo-

rary drawing media. Independent exploration of graphic problems emphasized. Solutions problems sought in relation to student's personal objectives. Prerequisite: ART 230. 6 studio hours.

### 240. PRINTMAKING: RELIEF I (C)

Basic study of material, technique, and aesthetic considerations peculiar to relief. Students print their own work. Prerequisite: ART 100 and 120, or permission of instructor. 6 studio hours.

### 242. PRINTMAKING: INTAGLIO I (C)

Basic study of materials, techniques, aesthetic considerations peculiar to etching, engraving, and aquatint. Students print their own work. Prerequisites, Art 100 and 120, permission of instructor. 6 studio hours.

### 244. PRINTMAKING: LITHOGRAPHY I (C)

Basic study of materials, techniques, aesthetic considerations peculiar to lithography. Students print their own work. Prerequisites: ART 100 and 120 or permission of instructor. 6 studio hours.

### 246. PRINTMAKING: RELIEF II

Advanced study of materials, techniques, aesthetic considerations relevant to relief printmaking. Students print their own work. Prerequisites, ART 240, 242, 244. 6 studio hours.

### 248. ART EDUCATION: METHODS AND MATERIALS I

Methods, tools, and materials used in public school art program, with emphasis on the elementary school level. 6 studio hours. Required for art education majors; prerequisite for student teaching.

### 250. ART EDUCATION: METHODS AND MATERIALS II

The literature, philosophies, procedures, and methods used in the teaching of art, with emphasis on the secondary school program. Required for art education majors; prerequisite for student teaching.

### 252. ART FOR THE YOUNG CHILD

The teaching of art in relation to the growth and development of children; program planning, evaluation, studio projects, and resources.

### 254. TYPOGRAPHY I

A studio course in typography and book design. The student selects a text, sets it in type, prints and binds at least one copy of a finished book. 6 studio hours.

### 260. SCULPTURE I (C)

Experimentation with materials. Investigation into the nature of 3-dimensional form. The development of 3-dimensional order. Individual projects. Prerequisites, ART 100 and 120. 6 studio hours.



2. **SCULPTURE II (C)**  
Continuation of ART 260. Prerequisite, ART 260. 6 studio hours.

4. **SCULPTURE III**  
Sequence of problems in direct and cast metal sculpture, using a variety of metals, techniques, and processes. Emphasizes traditional and modern foundry methods, and includes gas and electric welding. Prerequisite, ART 262 (previously or concurrently). 6 studio hours.

6. **SCULPTURE IV**  
Encourages development of a personal approach to sculpture and creative decisions. The student selects projects and materials of interest to himself and completes them within a classroom situation. Prerequisite, ART 264 (previously or concurrently). 6 studio hours.

8. **INTRODUCTION TO METALS AND FIBERS (C)**  
Introduction to materials and concepts related to design and execution of objects utilizing, or embellished by metals, wood, enamels or fibers. Emphasis on expanding design concepts applicable to the above media. Prerequisite, ART 100 and 120 or 6 studio hours.

10. **COMPUTER GRAPHICS WORKSHOP I**  
Students learn FORTRAN while others apply their programming skills to computer art. Lecture/workshop sessions 4 hrs. per week. Lab. 2 hrs. Prerequisites: must be B.F.A. student, or already know FORTRAN and have an interest in art. Interview with instructor required.

12. **COMPUTER GRAPHICS WORKSHOP II**  
Continuation of Computer Graphics Workshop I. 4 hrs. per week. Lab. 2 hrs. Prerequisite: ART 276.

14. **CERAMICS I (C)**  
Involvement with form through the use of clay and related materials. Hand-building and work on the potter's wheel stress a creative, aesthetic approach and related ceramic history. Prerequisite, ART 100 and 120. 6 studio hours.

16. **CERAMICS II (C)**  
Continuation of Art 280. Further refinement through hand-building and wheel techniques. Introduction to technology of clay, engobes, glaze firing. Prerequisite, ART 280. 6 studio hours.

18. **CERAMICS III**  
Creation of ceramic forms with stress on aesthetic principles rather than utility. Introduction to ceramic glaze technology and coloring media. Related ceramic history. Prerequisite, ART 282. 6 studio hours.

286. **CERAMICS IV**  
Continuation of Art 284. Emphasis on expressive potential of clay and glazes. Advanced techniques in glaze technology. Introduction to kiln design. Prerequisite, ART 284. 6 studio hours.

288. **GLASS BLOWING I**  
Basic principles and techniques of glass blowing from molten mixes, emphasizing experimental form. Prerequisite, ART 282 or permission of instructor. 6 studio hours.

292. **LIGHT WORKSHOP**  
Introduction to the use of light as a medium of aesthetic expression with emphasis on individual investigation into the techniques of modifying the quality of illumination. Prerequisites, three semesters in one of the following areas: painting, sculpture, ceramics, or printmaking. 6 studio hours.

294. **GLASS BLOWING II**  
Further refinement through additional forming techniques for molten glass. Prerequisite: ART 288. 6 studio hours.

320. **PAINTING V**  
Exploration of traditional and contemporary attitudes and approaches toward painting the human figure. Prerequisites, ART 224 and 226. 6 studio hours.

322. **PAINTING VI**  
Advanced work in painting composition with emphasis on independent exploration of painting problems and the development of effective personal forms of visual communication. Prerequisite, ART 224. 6 studio hours.

330. **INTERIOR DESIGN III**  
Planning, design, analysis and programming of interior spaces both residential and public. Interior materials, uses, applications, specifications and schedules. Prerequisites, ART 210 and 211 or equivalent.

331. **INTERIOR DESIGN IV**  
Continuation of Interior Design III with addition of research studies and design problems exploring programming and coordination of colors and furnishings. Portfolio preparation and presentation. Prerequisites, ART 210, 211, 330.

340. **PRINTMAKING: ITAGLIO II**  
Advanced study of materials, techniques, and aesthetic considerations relevant to etching, engraving, and aquatint. Students print their own work. Prerequisite, ART 240, 242, 244. 6 studio hours.

342. **PRINTMAKING: LITHOGRAPHY II**  
Advanced study of lithography, with emphasis on concepts and techniques of color lithography. Prerequisite, ART 240, 242, 244. 6 studio hours.

350. **SHELTER TECHNOLOGY AND DESIGN**  
Historic and contemporary construction techniques in wood, stone, concrete and plastic. Design/construction relationships, materials and components of architectural interiors and furnishings. Prerequisite: permission of instructor.

352. **CONSTRUCTION METHODS AND MATERIALS**  
Interior environmental systems; a survey course for Design students covering electrical, heating, ventilating, air conditioning, plumbing and acoustical systems, and their graphic applications to design and working drawings. Prerequisite: ART 350.

354. **PROFESSIONAL PRACTICE**  
Professional and business practices in design and architectural offices. Budgeting, product specifications and legal documents relating to the practice of design. The preparation of a portfolio and resume, and general preparation for professional careers. Prerequisite: Senior status.

356. **FURNITURE TECHNOLOGY**  
Required for professionally oriented students who will have to design free-standing and built-in furniture as required in most contract and many residential interior commissions. May be elected by students in ENVDES, LANDARCH, ART, BDIC-ARCH. Prerequisite: ART 210 or 211.

358. **FURNITURE TECHNOLOGY AND DESIGN**  
Required for Interior Design students. An extension of 356; also includes some lighting and graphic information and projects. May be elected by students in: ENVDES, THEATR, ART, BDIC-ARCH. Prerequisite: ART 210 or 211, or permission of instructor.

360. **SCULPTURE V**  
Advanced work in constructions and assemblage; formal and informal methods of composition, in a variety of materials and assembly techniques. Prerequisite, ART 266. 6 studio hours.

362. **SCULPTURE VI**  
Individual, collaborative and class projects of an advanced nature in new sculptural media such as plastics, light, and kinetics. Also inter-media projects involving the combination of sculpture with other arts such as painting, photography, architecture, urban design, music, dance, theater, etc. Prerequisite, ART 360 (previously or concurrently). 6 studio hours.

380. **CERAMICS V**  
Advanced exploration of ceramics and related media. Continued technology. Modern ceramic history. Emphasis on individual



objectives. Prerequisite, ART 286. 6 studio hours. May be concurrent with ART 382.

#### 382. CERAMICS VI

Continuation of Art 380. Emphasis on personal interpretation of major contemporary problems in ceramics. Prerequisite: May be concurrent with ART 380. 6 studio hours.

#### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. Permission of instructor and the filing of a plan of study required before registration. May not duplicate material covered in other courses. Prerequisite, Junior standing in Art. Credit, 1-6

#### 388. BFA DECREE PROJECT —

##### CERAMICS, PAINTING, PRINTMAKING, AND SCULPTURE

An independent advanced investigation and work pursued under the direction of a selected faculty committee and designed to evolve a body of work mature in concept and individual in style. Permission of the committee and the filing of a plan of study are required before registration. Normally taken for 6 credits; however, course levels 5 and 6 may be incorporated for up to 12 credits. May not be repeated. Prerequisite, Senior standing in BFA program. Credit, 6-12

#### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

#### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

### ART HISTORY

#### 111. SURVEY OF THE HISTORY OF ART: EARLY CULTURES AND CIVILIZATIONS (C)

Art and architecture in the western world from the Paleolithic era to the Gothic period.

#### 113. SURVEY OF THE HISTORY OF ART: RENAISSANCE TO MODERN (C)

Art and architecture in the western world from the Renaissance to the present time.

#### 117. INTRODUCTION TO THE VISUAL ARTS (C)

An examination of the diverse media of the visual arts from a topical rather than a strictly historical viewpoint. Beginning with the fundamental techniques of formal and stylistic analysis, the course surveys a wide range of topics in the context of the relation of art objects to their cultures, creators, critics, and public.

#### 205. GREEK ART (C)

The sculpture, painting and architecture of Ancient Greece from Protogeometric beginnings to the end of the Hellenistic period. Students are encouraged to take ART 111 or ART 115 before this course.

#### 225. EARLY MEDIEVAL ART (C)

Early Christian art and the beginnings of Byzantine art in East and West; Coptic art, Barbarian and Celtic influences in northern Europe; Carolingian, Ottonian and Anglo-Saxon art.

#### 227. ARTS OF THE ROMANESQUE AND GOTHIC PERIODS (C)

Art of the High Middle Ages; Romanesque and Gothic art with emphasis on architecture, monumental sculpture and painting in western Europe.

#### 233. ISLAMIC ART AND ARCHITECTURE I (C)

Survey of the art and architecture of the Islamic peoples. Origins of Islamic art and institutions in the Near East, and its development throughout the Islamic world to the eve of the Mongol invasions in the 13th century.

#### 235. ISLAMIC ART AND ARCHITECTURE II (C)

Survey of the art and architecture of the Islamic peoples; beginning in the 13th century. The art of the Mongols and Timurids in Iran and the Mamluks in Egypt, through the great Turkish, Iranian, and Indian Islamic cultures of the 16th century and beyond.

#### 245. ITALIAN ART OF THE EARLY AND HIGH RENAISSANCE, 1400-1520 (C)

The development of Italian art and architecture of the 15th and early 16th centuries in historical context.

#### 249. RENAISSANCE IN NORTHERN EUROPE, (1400-1600)

A historical and topical survey of the art produced in Flanders, Holland, Germany, and France from 1400-1600 with emphasis on painting. Prerequisite: ART 111 or 113 or 117.

#### 255. BAROQUE ART AND ARCHITECTURE IN ITALY (C)

Art and architecture in Italy from 1600 to 1750, with emphasis on Rome. Students are encouraged to take ART 113 or 115 before this course.

#### 261. THE ARTS OF AFRICA, OCEANIA, AND PRE-COLUMBIAN AMERICAS (C)

An introduction to the so-called "primitive arts" of traditional peoples of Africa, Oceania and pre-Columbian Americas.

#### 265. BAROQUE ART AND ARCHITECTURE IN NORTHERN EUROPE (C)

Art and architecture in France, Flanders, Hol-

land, Germany, and Austria from 1600 to 1750. Students are encouraged to take ART 113 or 115 before this course.

#### 271. ART OF INDIA (C)

The development of ancient Indian culture analyzed through the surviving arts. Beginning with the Neolithic revolution and the remains of the Indus Valley Civilization focuses mainly on the development of the art of Buddhism through the Gupta period.

#### 273. THE HINDU TEMPLE (C)

The concept and development of the Hindu Temple of South, and to a lesser extent Southeast Asia. Emphasis on the coherence and integration of the arts in traditional culture.

#### 275. CHINESE PAINTING (C)

The secular tradition of the East Asian graphic arts, from prehistoric times up to the present. Korean and Japanese as well as Chinese work discussed.

#### 277. THE ART OF BUDDHISM (C)

The development of Buddhism as seen through the development of Buddhist art, as spread from India via Central and Southeast Asia to China and Japan.

#### 285. EUROPEAN ART, 1780-1880 (C)

Major developments in painting from David to Post-Impressionism in France, England, and Germany.

#### 287. EUROPEAN ART, 1880-PRESENT (C)

Major artists and developments from Post-Impressionism to the present.

#### 291. 19TH CENTURY ARCHITECTURE (C)

Developments in the late 18th century and history of changes in style, technical advances, and aesthetic principles during the 19th century in Europe and America.

#### 293. 20TH CENTURY ARCHITECTURE (C)

Developments in modern architecture in Europe and America from 1900 to the present including influential personalities, social and political influences, structural innovation and aspects of city planning.

#### 295. AMERICAN ART (C)

The earliest colonial art, the impact of late European influences, regional art of the 19th and 20th centuries, and contemporary developments.

#### 305. ART OF EARLY MEDITERRANEAN CULTURES (C)

Brief consideration of Paleolithic-Neolithic background; emphasis on the high cultures of the Bronze Age; Egypt (and related Tigris-Euphrates lands); Minoan and Helladic; Phoenician and derived. Also, Cyprus, Assyrian and Syro-Palestinian in first millennium. Prerequisite, ART 115, or permission of instructor.

3. **MEDIEVAL PAINTING (C)**  
Early Christian murals and mosaics; Byzantine painting; early and later medieval painting in Western Europe; stylistic parallels in manuscript illumination and stained glass. Prerequisites, ART 111, 115, 225, 227 or permission of instructor.

3. **ITALIAN ART OF THE LATE RENAISSANCE AND MANNERISM (C)**  
The dissolution of the High Renaissance; proto-Baroque and early Mannerist art; the early Mannerism of the revived feudal class after 1530; the artistic response to the Counter-Reformation. Prerequisite, ART 246 or permission of instructor.

3. **ASPECTS OF NORTHERN EUROPEAN BAROQUE (C)**  
Selected aspects of Art or Architecture in France, Flanders, Holland, Germany, or Austria from 1600 to 1750. Treated in a combination lecture-seminar of limited size. Prerequisite, ART 255, 265 or permission of instructor.

3. **373. GREAT THEMES IN ART HISTORY (C)**  
Central themes, issues, and problems of an important area in the history of art. Prerequisite, a survey level course bearing on the particular theme to be examined, or permission of instructor.

3. **377. MASTERS OF WESTERN ART (C)**  
Intensive study of the work of a master in the field of art. Permission of instructor. 1 or 2 class hours.

3. **383. METHODS OF ART HISTORY (C)**  
Introduction to the methods of study in this field, emphasizing different approaches to the work of art. Recommended for art history majors; open to other qualified students. Permission of instructor.

3. **386. SPECIAL PROBLEMS**  
Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

3. **ROMAN ART (C)**  
Origins and development of Roman architecture, portraiture, historical relief, painting and mosaics. Prerequisites, ART 115 or 205, or Ancient History or permission of instructor.

3. **CRITICISM OF MODERN ART (SEMINAR)**  
Practical exercises in the evaluation of modern paintings. Discussion of the results.

3. **ASPECTS OF AMERICAN ARCHITECTURE (C)**  
Selected aspects of the history of changes in style, technical advances, or aesthetic principles

of architecture in the United States. Prerequisite, permission of instructor.

398. **SENIOR HONORS**  
Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

399. **SENIOR HONORS**  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Asian Studies

*Chairman of Program:* Associate Professor Ching-mao Cheng; *Associate Professor:* Naff; *Assistant Professors:* Cohen, Gjertson, Ozawa, Teng; *Associated Faculty:* Maki (Political Science), Miller (Comparative Literature).

Major programs can be arranged in either Chinese or Japanese language and literature in which students may place emphasis on either modern or classical language. Students in either major program receive training designed to provide them with a substantial foundation in reading, speaking, and understanding the language, as well as with a basic knowledge of the respective literatures and their cultural contexts. Students are encouraged to acquire a background in the history, government, society, religion, and arts of China and Japan — a background essential for an understanding of the cultures and literatures of the Chinese and Japanese people. Assistance in designing a major program may be obtained at the Asian Studies Program Office, 804 Thompson Hall.

In addition to the courses listed below, various departments in the University (and Five College system) offer courses dealing with specific aspects of China, Japan, and other parts of Asia. Consult the offerings of the Departments of Anthropology, Art, Comparative Literature, Geography, History, Political Science, and Sociology.

## LANGUAGE AND LITERATURE

### CHINESE

110. **NON-INTENSIVE ELEMENTARY CHINESE I**  
Non-intensive instruction in conversational Mandarin, with a limited amount of Chinese characters introduced. Use of simplified characters and latinisation.

126 (I). **INTENSIVE ELEMENTARY CHINESE**  
For those with no previous training in Chinese. Intensive introduction to the standard language (Mandarin) of China. 5 class hours. Honors section (2 credits) may be added in conjunction with this course, focusing

on the study of origin and development of Chinese character. Study of the 214 radicals. Credit, 6.

130. **NON-INTENSIVE INTERMEDIATE CHINESE**  
Non-intensive Mandarin Chinese, with emphasis on the oral aspect. Romanization and simplified characters follow those currently used in mainland China. Introduction of simplified characters up to 300. Practice in using dictionaries and writing short essays.

146 (II). **INTENSIVE ELEMENTARY CHINESE**  
Intensive training in conversational Mandarin and in composition. Systematic introduction of 600 basic Chinese logograms. Prerequisite, CHINESE 126. 5 class hours. Honors section (2 credits) may be added in conjunction with this course. Practice in working with various types of Chinese dictionaries. Basic Chinese calligraphy. Credit, 6.

226 (I). **INTENSIVE INTERMEDIATE CHINESE (C)**  
Intensive instruction in Mandarin. Development of Skills in reading, writing, and speaking Chinese. Prerequisite, CHINESE 146 or equivalent. 5 class hours. Credit, 6.

227 (II). **INTENSIVE INTERMEDIATE CHINESE (C)**  
Intensive introduction to modern Chinese literature. Analysis and discussion of basic modern literary texts. Prerequisite, CHINESE 226 or equivalent. 5 class hours. Credit, 6.

238 (I). **CHINESE FOLK RELIGION**  
The eclectic religious beliefs common in varying forms and degrees to nearly all Chinese. The influence of this form of religion on various aspects of Chinese society. An introduction to the "Little Tradition" of Chinese religion and thought. Prerequisite, HIST 115, or the equivalent basic knowledge of Chinese history, or junior standing. Knowledge of Chinese language not necessary.

253. **ART AND LITERARY THEORIES OF TRADITIONAL CHINA I. (C)**  
To provide a basic understanding of the aesthetic concerns of traditional China. It should prove to be of particular interest to students of comparative aesthetics and comparative literature.

254. **ART AND LITERARY THEORIES OF TRADITIONAL CHINA II. (C)**  
To provide a basic understanding of the aesthetics of traditional China. Part II deals with the period Sung (10th) through Ch'ing (19th).

275 (I). **SYNTACTIC STRUCTURES OF CHINESE (C)**  
Synchronic study of the syntactic structures of Mandarin. Survey of the development of



Chinese syntactic theories during this century. Critical investigation of current issues in Chinese syntax. Prerequisite, CHINSE 227.

#### 280. SUMMER INTENSIVE INTERMEDIATE CHINESE

Additional training in spoken Mandarin. Explanations of and intensive drills in advanced grammatical structures; orthodox and simplified characters up to 1500 level. Introduction of modern literary style and exercises in short essays and composition. Prerequisites, CHINSE 126, 146 or equivalent. Fifteen class hours and 5 lab hours. Credit, 8.

#### 326 (I). READINGS IN CHINESE COMMUNIST LITERATURE (C)

Intensive introduction to literary, social, and political writings by important Chinese Communist writers and thinkers. Prerequisite, CHINSE 227. 5 class hours. Credit, 8.

#### 327 (II). READINGS IN CONTEMPORARY CHINESE LITERATURE (C)

Intensive introduction to modern essays and short stories by famous modern writers such as Lu Hsun, Mao Tun, and Kuo Mo-jo. Prerequisite, CHINSE 227. 5 class hours. Credit, 6.

#### 350 (I). ELEMENTARY CLASSICAL CHINESE (C)

Introduction to the literary language of China that was used in all types of literature, scholarship, and documents until the 20th century. Stress on grammar with introduction to various tools for philological analysis of texts. Prerequisite, CHINSE 146 (for two semesters of any modern Chinese language); or JAPAN 227 (or equivalent). 4 class hours. Credit, 4.

#### 351 (II). INTERMEDIATE CLASSICAL CHINESE (C)

Readings in a variety of prose and verse mostly selected from medieval Chinese writings. Emphasis on increasing reading speed and extending vocabulary. Prerequisite, CHINSE 350.

#### 352 (I). READINGS IN CHINESE HISTORICAL TEXTS

Readings in Chinese historical texts. Advanced reading of the literary language of China. Introduction to historical writings.

#### 355. MASTERPIECES OF CLASSICAL CHINESE POETRY (C)

A critical reading of selections from major anthologies and authors of various poetic genres written in classical Chinese from the Chou dynasty to the present. Included are the Book of Odes, Ch'u Tz'u, T'ang and Sung masters.

#### 356. MASTERPIECES OF CLASSICAL CHINESE PROSE (C)

A critical reading of selections from major anthologies and authors of various prose

forms in classical Chinese in premodern China. Included are rhymed prose (fu), literary criticism, the short story (ch'uan-ch'i), and classical and neo-classical essays. Prerequisites, at least two semesters of classical Chinese, or permission of instructor.

#### 370 (II). INTRODUCTION TO CHINESE PHILOLOGY AND BIBLIOGRAPHY (C)

Development of familiarity with a wide range of philological methods relevant to the interpretation of Chinese texts and with the basic reference and bibliographic works necessary for efficient use of Chinese primary source materials. Prerequisite, CHINSE 350.

#### 375 (II). HISTORY OF THE CHINESE LANGUAGE (C)

Survey of modern Chinese dialectology. Diachronic studies of the grammatical and phonological structures of Chinese in three stages: Archaic, Ancient, and Modern. Prerequisite, two years of Chinese (Cantonese or Mandarin).

#### 376. CHINESE DIALECTOLOGY

Survey of the phonological and syntactic structures of major Chinese dialects with emphasis on Mandarin, Cantonese, Amoy and Shanghai dialects. Reconstruction of Ancient Chinese (ca. 7th Century A.D.) based on the comparative studies of modern Chinese dialects and various rhyme books. Demonstration of field methods using Tai-shan dialect as a model. Prerequisite, CHINSE 275.

### JAPANESE

#### 110. NON-INTENSIVE ELEMENTARY JAPANESE I

Basic structure of the Japanese language. Speaking, reading, writing (Hiragana writing system and about 50 kanji characters), and aural comprehension.

#### 120. NON-INTENSIVE ELEMENTARY JAPANESE II

The sequel to JAPAN 110; the basic structure of the Japanese language. Speaking, reading, writing, (Katakana writing system and additional 50 kanji characters), and aural comprehension. The sequence of JAPAN 110 and 120 is equivalent to JAPAN 126.

#### 126 (I). INTENSIVE ELEMENTARY JAPANESE I

For those with no previous training in Japanese. Intensive introduction to Japanese. 5 class hours. Honors sections (2 credits) may be added in conjunction with this course, focusing on reading and writing practice. Credit, 6.

#### 130. NON-INTENSIVE ELEMENTARY JAPANESE III

Non-intensive instruction in elementary Japanese: speaking, oral comprehension, reading,

and writing (including about 100 new kanji characters). Prerequisites, JAPAN 120, 126 or permission of instructor.

#### 146 (II). INTENSIVE ELEMENTARY JAPANESE II

Intensive study and review of the basic structure of Japanese: reading, writing and conversation. Prerequisite, JAPAN 126. 5 class hours. Honors sections (2 credits) may be added in conjunction with this course, focusing on reading and writing practice. Credit, 6.

#### 226 (I), 227 (II). INTENSIVE INTERMEDIATE JAPANESE I, II (C)

Intensive reading and analysis of literary texts; discussion in Japanese. Prerequisite, JAPAN 146; 226 is prerequisite to 227. 5 class hours. Credit, 6 each.

#### 230 (I), 231 (II). JAPANESE ART AND CULTURE (C)

The development of Japanese art (map, painting, sculpture, and architecture) from the Archaeological Age to the end of the Muromachi Period in 1573 (I), and then to the present day (II). Particular attention to cultural and historical background and to the relationship between written materials and artistic work. Class organized around lectures, slides, and discussions. (230 is not prerequisite to 231.)

#### 235. INTRODUCTION TO JAPANESE CIVILIZATION I

Development of Japanese Culture: Traditional cycle of life, family and society, occupation, houses and furnishings, clothing and food and drink.

#### 236. INTRODUCTION TO JAPANESE CIVILIZATION II

Development of Japanese Culture: Relationship of nature, seasons and annual functions, religion, sports, language and expression, and the Japanese way of thinking. Prerequisite, JAPAN 235.

#### 243. JAPANESE LITERARY TRADITION I (C)

Introduction to Japanese poetry, the novel and the theatre among the literary products of the first thousand years of high culture in Japan.

#### 244. JAPANESE LITERARY TRADITION II (C)

Introduction to the problems of traditional and modern, native and foreign as seen in Japanese literature between 1600 and present.

#### 275. JAPANESE LINGUISTICS I

The structure of Japanese in the light of modern linguistics. An honors section (1 credit) may be added in conjunction with this course for extra reading and discussion on the given subjects.



6. JAPANESE LINGUISTICS II  
Study of the structure of Japanese in the light of the concept "universal grammar". An honors section (1 credit) may be added in conjunction with this course for extra reading and discussion on the given subjects.

0 (I), 321 (II). READINGS IN HUMANITIES I, II (C)  
Extensive reading and discussion, in Japanese, of modern Japanese literary, scholarly and journalistic materials. Prerequisite, JAPAN 7; 320 is Prerequisite to 321.

2. READINGS IN SOCIAL SCIENCE  
Essays and papers written in Japanese by modern social scientists such as Masao Maruyama, Shigeto Tsuru, Hidetoshi Kato, Tetsuo Tsurumi and Masataka Koosaka. Selections from newspaper articles included.

6. TOPICS IN JAPANESE LINGUISTICS  
Critical examination of some of the current linguistic theories in respect to the Japanese language. Prerequisite, JAPAN 275, 376 or permission of instructor.

LECTURE COURSES (Knowledge of an Asian language not required)

ASIAN STUDIES 150. THE DEVELOPMENT OF MODERN ASIA (D)  
Problems of the nations of East and Southeast Asia created by the transition from traditional, pre-modern status to modern nationalism and full involvement in world affairs. Primarily for students with no background of study of modern Asia.

JAPANESE 230 (I), 231 (II). JAPANESE ART AND CULTURE

JAPANESE 235 (I), 236 (II). INTRODUCTION TO JAPANESE CIVILIZATION

JAPANESE 243 (I), 244 (II) (C). JAPANESE LITERARY TRADITION

CHINESE 240 (C). FICTION EAST AND WEST

CHINESE 242 (C). CHINESE TRADITIONAL VERNACULAR LITERATURE

CHINESE 251 (C). CONTEMPLATIVE LITERATURE EAST AND WEST

CHINESE 252 (C). CONTEMPLATIVE POETRY EAST AND WEST

CHINESE 385 (I), 386 (II). SPECIAL PROBLEMS

Credit, 1-6

JAPANESE 385 (I), 386 (II). SPECIAL PROBLEMS

Credit, 1-6

## Classics

*Head of Department:* Professor Gilbert Lawall; *Professors:* Dyer, Phinney; *Associate Professors:* Cleary, Coar, Stavrolakes; *Assistant Professors:* Isbell, Marry, Will.

The Classics major offers a choice among the following areas of concentration: 1) Classical Civilization and Literature, 2) Greek, 3) Latin, 4) Mediterranean Archaeology, and 5) Religion. The Classical Civilization and Literature Concentration requires a minimal amount of study of Greek or Latin, and the remainder of the courses are taken in ancient mythology, religion, literature in translation, history, philosophy, art and archaeology, and the classical tradition. Some courses may be taken in departments other than Classics. The Greek and Latin Concentrations prepare for graduate work and teaching careers at the secondary school or college levels. The Mediterranean Archaeology Concentration is interdepartmental and interdisciplinary in nature and prepares for graduate study and careers in teaching, field archaeology, and museum work. The Religion Concentration can accommodate the needs of those who wish a broad undergraduate major in religion, those who plan to enter seminary, and those who plan to continue with graduate studies in religion or Near Eastern Studies. The Religion Concentration is interdepartmental and interdisciplinary and usually includes courses in the departments of religion at the neighboring colleges. Specific requirements for each of these concentrations are available from the Department of Classics. Honors programs may be arranged in each concentration.

## CLASSICS

The following courses require no knowledge of Greek or Latin.

100 (I), (II). GREEK CIVILIZATION (C)  
A survey of ancient Greek literature, art, and society. The impact of the Greek experience on the cultural life of the Western world.

102 (I), (II). ROMAN CIVILIZATION (C)  
A survey of ancient Roman culture and civilization. The impact of the Roman experience on the cultural life of the Western world.

105 (I), (II). GREEK AND LATIN ELEMENTS IN ENGLISH  
Historical survey of the induction of Greek and Latin words into English; Greek and Latin roots, prefixes, and suffixes in English; spelling, meaning, problems of expression.

205 (I). THE MATERIAL WORLD OF THE ROMANS

The Romans as people on the basis of the archaeological evidence about their daily lives (their houses, pottery, coins, glass, textiles). Special attention to the finds from Pompeii.

206 (II). THE ANCIENT CITY (D)  
The city and city planning in the ancient Near East, Greece, and Italy; sociological and economic aspects; the city of Rome and its urbanization in the Roman Empire.

225 (I), (II). MYTHOLOGY IN THE ANCIENT WORLD I (C)  
A survey of ancient Greek myths with their Babylonian or Hebrew prototypes; authority of written or visual sources; structure of myth; religious, artistic, and social observances.

226 (I), (II). MYTHOLOGY IN THE ANCIENT WORLD II (C)  
A survey of ancient Egyptian myths with their Indo-Iranian, Greco-Roman, and early Christian survivals; authority of written or visual sources; structure of myth; religious, artistic, and social observances.

228 (I). RELIGIONS OF THE GREEK WORLD (C)  
Origins and development of ancient Greek worship, deities, cults, festivals, and life-crisis ceremonies; prehistoric, Near Eastern, and Indo-Iranian influences; chauvinistic, philosophical, and mystical reactions to received religion.

229 (II). RELIGIONS OF THE ROMAN WORLD (C)  
Origins and development of native Roman worship, deities, cults, festivals, and life-crisis ceremonies; importation of foreign cults and festivals; the failure of paganism and the victory of Christianity.

261 (I). GREEK LITERATURE IN TRANSLATION (C)  
Homer, lyric poetry, the major dramatists, selected dialogues of Plato, Herodotus, Thucydides, and their relations to the classical tradition.

262 (II). LATIN LITERATURE IN TRANSLATION (C)  
The development of Latin literature from Greek models; the emergence of uniquely Roman forms of comedy, tragedy, epic, lyric, pastoral, satire, history, biography, and novel; their influence on later literatures.

265 (II). GREEK DRAMA IN TRANSLATION (C)  
Thematic analysis of Greek tragedies and comedies; typical characterization; cultural, political, and social values as expressed in the plays.

275 (I), (II). THEMES IN CLASSICAL LITERATURE (C)

A major theme in Classical literature, such as the hero or anti-hero, women, the individual and society, urban problems, the rise of science, religious or philosophical issues.

285 (II). THE DEEP STRUCTURES OF GREEK THOUGHT (C)

The development of thought in the ancient world from the time of Homer to Aristotle, tracing the evolution of mental concepts and ways of thinking about humanity and the human environment.

295 (I), (II). INTERPRETING ANCIENT MYTH (C)

A view of what thinkers have said about ancient myth for over 3,000 years; misreadings of ancient myths; shaping of popular modern views of ancient myth; future trends of myth interpretation.

385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors office. Credit, 4.

399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

GREEK

110 (I). ELEMENTARY CLASSICAL GREEK (INTENSIVE)

An introduction to the elements of the Greek language. 5 class hours. Credit, 5.

111 (I). ELEMENTARY NEW TESTAMENT GREEK (INTENSIVE)

An introduction to the elements of koine Greek, the language of the New Testament. 5 class hours. May not be taken for credit in addition to GREEK 110. Credit, 5.

140 (II). INTERMEDIATE CLASSICAL GREEK (INTENSIVE)

Mastery of the basic structures of the Greek language and attainment of intermediate competence in reading Greek prose. Prerequisite, GREEK 110. 5 class hours. Credit, 5.

141 (II). INTERMEDIATE NEW TESTAMENT GREEK (INTENSIVE)

Mastery of the basic grammar of New Testament Greek and practice in reading from the New Testament. Prerequisite, GREEK 111. May not be taken for credit in addition to GREEK 140. 5 class hours. Credit, 5.

150 (I), 160 (II). THE READING OF GREEK (C)

The development of increased competence in reading Greek prose.

210 (I). GREEK POETRY (C)

Selections from Homer's *Iliad*.

220 (II). GREEK PROSE (C)

Selections from Herodotus.

385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

LATIN

110 (I), (II). ELEMENTARY LATIN (INTENSIVE)

An introduction to the elements of the Latin language. 5 class hours. Credit, 5.

115 (I), 125 (II). LATIN AS A BASIC LANGUAGE

An introduction to the Latin language especially for students learning their first foreign language and for those who have experienced difficulty with foreign languages. Aims at better understanding and use of English and a firm basis for further language study. May not be taken for credit in addition to LATIN 110.

140 (I), (II). INTERMEDIATE LATIN (INTENSIVE)

Mastery of the basic structures of the Latin language and attainment of intermediate competence in reading Latin prose. Prerequisites, LATIN 110 or 125 or 2 to 3 years of Latin in high school. 5 class hours. Credit, 5.

200 (I), (II). AENEAS TO AUGUSTUS (C)

Selections from prose and poetry illustrating the development of Roman history from Aeneas to the Augustan Principate. Prerequisites, LATIN 140 or 3 to 4 years of Latin in high school.

201 (I), (II). CATULLUS (C)

Selections from Catullus. Prerequisites, LATIN 150 or 4 to 6 years of Latin in high school.

205 (I). ORAL INTERPRETATION OF LATIN LITERATURE

Practice in the expressive reading of Latin texts. 1 or more class hours. Credit, 1. May be repeated up to 3 credits.

215 (I). GRAMMAR AND STYLE

The structure of the Latin sentence and the aspects of Latin grammar foreign to English studied by contrasting representative Latin prose authors with English prose and translating English into Latin.

(Three of the following Latin courses, 325-3 will be offered each semester.)

325. THE LATIN POLITICAL TRACT (C)

Selections from Sallust and Caesar accompanied by an historical and literary analysis of their works.

326. LATIN DIDACTIC EPIC (C)

Selections from Lucretius, Vergil's *Georgics* and Ovid's *Ars Amatoria*.

327. LATIN HISTORY AND BIOGRAPHY (C)

Selections from Livy, Tacitus, and Suetonius.

328. LATIN DRAMA (C)

Selected plays of Plautus, Terence, and Seneca.

329. LATIN ESSAYS AND LETTERS (C)

The Roman mind as revealed in the philosophical works of Cicero and the moral epistles of Seneca; Roman private life and personal concerns as revealed in the letters of Cicero and Pliny.

330. LATIN ELEGIAC POETRY (C)

Selections from Catullus, Tibullus, Propertius and Ovid.

331. CICERO'S ORATIONS (C)

The major orations of Cicero; their social and political background.

332. LYRIC POETRY (C)

Selected lyrics of Catullus and Horace.

333. VERGIL'S *AENEID* (C)

The entire poem with attention to tradition and contemporary critical perspectives and evaluations.

385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit,

398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit,

399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit,



## Comparative Literature

*Chairman of Department:* Professor Sarah Wall. *Professors:* Anderson, Will; *Associate Professors:* Miller, Moebius; *Assistant Professors:* Lenson, Levine, Lucid, Martin; *Adjunct Instructor:* Portuges. *Associated Faculty:* Caser, Mankin, Porter, Sturm (French and Italian); Page (English); Beekman, Lennox, Schiffrin (Germanic Languages); Lester (African American Studies) Naff (Asian Studies).

Comparative Literature is the study of literature without regard to national boundaries. It encourages detailed scrutiny of literary masterworks in the original language, comparisons between national literary traditions, and comparisons with other spheres of human expression. Comparative Literature sees literary history in an international perspective, and literary forms in the light of modern critical theories. It embodies a variety of approaches to an understanding of the meaning and function of literature, considered both in itself and in its interdisciplinary dimensions.

Three different types of programs lead to the B.A. degree in Comparative Literature. All three programs emphasize analysis and comparison of several national literary traditions; the second type of program explores, in addition, the relation of literature to one other discipline (e.g. art, philosophy, anthropology, psychology, linguistics, sociology). The first two types of program are designed for the student who would like to be prepared to go on to graduate school in Comparative Literature or in some allied field. The third type of program is designed for the student who does not plan to go on to graduate school but wishes to read widely and in some depth in two different literatures and languages. All three programs combine courses from related departments with core courses in Comparative Literature. Within the guidelines for the major, students work closely with Comparative Literature faculty to develop individual programs of study. A detailed statement concerning these three types of programs and related requirements may be obtained at the Comparative Literature office.

### 1. INTRODUCTION TO COMPARATIVE LITERATURE (C)

Literature as one of the modes of cultural expression. Comparisons and contrasts drawn from contemporary cinema, practical theater, music, and graphic art as well as from older works of art, both from the Occidental and the Oriental traditions.

### 2. MODERN EUROPEAN LITERATURE (C)

The ways in which 20th-century literature has posed and answered questions about the human condition. The political and artistic consequences of the loss of tradition and community in an age of technology and revolutionary ideology. Readings from Marx,

Nietzsche, Malraux, Camus, Brecht, Artaud, and less well-known representative works from Italian, Spanish, and East European literature.

### 202. MODERN EUROPEAN LITERATURE II (C)

The tradition of subjectivity in modern literature, particularly fiction, focusing on the conflict between social ethic and individual needs and desires. The superfluous human being as prototype of the overly self-conscious protagonists of modern narrative; the illusory relationship between art and social deviance.

### 203. THE EUROPEAN NOVEL (C)

French, Spanish, German, Russian, and English novels of the 17th to the 20th centuries. In the context of the consciousness they reflect, describe, and transcend.

### 204. CLASSICS OF EUROPEAN LITERATURE (C)

Major works from the earlier literatures of Europe in English translation, with emphasis on a major genre such as the epic or drama. The interdependence of art and general culture, shown through lectures on religion, sociology, politics, and economics.

### 205. THE ARTIST NOVEL (C)

The artist's search for his roots in landscape and in mythical and legendary prototypes. An introduction to the cultural milieu of the displaced, supercultivated European of the late 19th and 20th centuries, with emphasis on Joyce and Proust.

### 214. FROM DANTE TO SHAKESPEARE (C)

Major developments in the literary imagination which took place in European literature between the 14th and 17th centuries. Close analysis of texts by major writers of the period in their historical and literary contexts.

### 231. MODERN AFRICAN LITERATURE (C)

An introduction to the modern literature of Africa south of the Sahara, examining such topics as the role of literature and the writer in an emergent country, the blending of Western and indigenous elements in a new literature, and the literary expression of color consciousness.

### 240. FICTION EAST AND WEST (C)

A comparative approach to major works of fiction and their evolution within the Oriental and Occidental traditions, investigating the various forms, meanings, and uses of traditional fiction in Eastern and Western literature. The encounter of Orient and Occident in 20th-century examples of prose fiction from the works of Hesse, Forster, Malraux, Salinger, Kerouac, and Brautigan. Readings from Chinese fiction in English translation include *The Way of Chuang-tzu*, *All Men Are Brothers*,

*ers*, *Monkey*, *Prayer Mat of Flesh*, and *Red Chamber Dream*.

### 241. CONTEMPORARY CHINESE LITERATURE (C)

An introduction to continuity and change in 20th-century Chinese fiction, drama, and poetry, including both Communist and non-Communist literature of the Chinese mainland. The impact of Western literature on China and the resultant Chinese "Literary Renaissance." The relation between literature and politics in modern China; consideration of Chairman Mao Tse-tung's concept of literature as "Revolutionary Power." Readings in English translation include Mao Tse-tung, Lu Hsun, Lao-she, Pa Chin, Mao Tun, Kuo Mo-jo, Shen Ts'ung-wen, André Malraux.

### 242. CHINESE TRADITIONAL VERNACULAR LITERATURE (C)

The development of Chinese fiction and drama from the medieval story-teller tradition through the modern period of literary symbolism. Chinese concepts of the novel and theatre; the relation between erotic and allegoric literature in the evolution of Chinese society.

### 243. JAPANESE LITERARY TRADITION I (C)

Japanese literature from 500 A.D. to 1600 A.D. Readings, in English translation, of court poetry, the *Tale of Genji*, the military tale, and the No theatre. The impact of Buddhism and of Chinese thought and literature on the course of Japanese literary development; the role of Zen in medieval Japanese aesthetics, and early and medieval Japanese literature as an expression of Japanese civilization.

### 244. JAPANESE LITERARY TRADITION II (C)

Japanese literature since 1600. Linked verse and Haiku, the rise of popular theatre and fiction in the townsmen's culture in the 17th and 18th centuries. The modern novel (since 1885) and the interaction of Japanese and Western intellectual and artistic traditions. Novelists include Natsume Soseki, Tanizaki, Jun'ichiro, Kawabata Yasunari, and Mishima Yukio.

### 251. CONTEMPLATIVE PROSE EAST AND WEST (C)

A critical reading of contemplative prose written by contemplatives and monks of the Oriental (Buddhist, Taoist, Confucian) and Occidental (Christian) traditions. Comparisons between the imaginative presentation of concepts of reality, the self, and salvation in selected Eastern and Western prose. Consideration of how mystics of different traditions perceive ultimate reality and how an approach may be made to such reality.

### 291. MYTH AND LITERATURE (C)

The myths of creation and of self-develop-



ment; emphasis on the literary treatment of mythical experience. Mythical trends and models identified in ancient literary texts and in very recent poetry and fiction.

### 307. LITERARY GENRE

A major or minor category of literature examined through theoretical approaches and the close reading of representative texts from several literatures. Topics offered in rotation; the concept of genre may itself be one of these.

### 311. EUROPEAN LITERATURE OF THE MIDDLE AGES I (C)

Medieval romance and lyric from France, Germany, Italy, England, and Spain. Close analysis of texts: the literary, social and psychological conventions. The altered perspectives on those conventions expressed in late medieval works.

### 312. EUROPEAN LITERATURE OF THE MIDDLE AGES II (C)

Medieval allegory and drama from France, Germany, Italy, England, and Spain. The development from the late Classical and early Christian periods, of the allegorical tradition and of the dramatic tradition which evolved from it. The medieval imaginative conventions as expressed in allegory, and the changes of those conventions in allegories and drama of the 14th century.

### 321. RENAISSANCE PERSPECTIVES (C)

The tradition of the Middle Ages and the heritage of the Renaissance: the rhetoric of writing and the arts of reading and interpretation as handed down to the Renaissance.

### 322. THE SHAPE OF THE RENAISSANCE (C)

Diversity and changes of literary style in the 15th and 16th centuries, with emphasis on cultural continuity; an examination of critical methods.

### 331. THE ENLIGHTENMENT (C)

Characteristic themes, ideas, and attitudes in 18th-century European literature. Focus on major representatives of the Age of Reason such as Pope, Swift, and Johnson in England; Montesquieu, Voltaire, and Diderot in France; Wieland and Lessing in Germany.

### 341. ROMANTICISM (C)

The Western Romantic movement as exemplified by its principal figures from the Age of Rousseau to 1850.

### 342. IDEALISM TO REALISM (C)

Developments such as realism, naturalism, aestheticism, and neo-romanticism in the literatures of England, France, Germany, and Russia, against the background of 18th century idealism.

### 347. LITERATURE AND MUSIC (C)

Relations between music and literature from

Plato to Samuel Beckett. The aesthetics of Schopenhauer and the synthesis of Wagner as the crux of a modern problem of meaning and structure in both literature and music.

### 351. SYMBOLIST POETRY (C)

The development of symbolism during the 19th and 20th centuries as seen in the poetry of France (Baudelaire, Verlaine, Mallarmé, Rimbaud), Germany (George, Hofmannsthal, Rilke), and England (Yeats, Pound, Eliot).

### 352. MODERN DRAMA (C)

Currents in Western drama since Ibsen, with emphasis on one or more of the following topics: naturalism, symbolism, neo-romanticism, expressionism, folk drama and fantasy, epic realism, the "grotesque" and "absurd" theater.

### 361. THE CONTEMPORARY NOVEL (C)

Commitment and innovation in the modern novel. The nature of literary and extraliterary influences, trends, and themes that define and establish the current major traditions of the novel.

### 371. EUROPEAN EPIC POETRY (C)

Literary analysis of major classical and Renaissance epics (Homer, Vergil, Dante, Milton) and three related heroic poems ("Gilgamesh," "Beowulf," "Chanson de Roland"), with emphasis on their intrinsic qualities as works of art. Specific epic techniques and the general epic tradition related to other genres and literary problems; examination of the sources of many later patterns and themes.

### 375. INTERNATIONAL LITERARY RELATIONS (C)

Subjects and problems common to two or more different national literatures. The interplay between text, language, history, and nationality.

### 376. THEORIES OF COMPARATIVE LITERATURE

A survey and critique of various theories of the nature of comparative literature; practical discussion of the methodology of research and speculation in the discipline.

### 380. THEORIES OF LITERATURE (C)

Analysis and comparison of major contemporary theories of literature (formalist, structuralist, Marxist, phenomenological). Background reading in Plato and Aristotle as roots of the Western literary-critical tradition. A problem-oriented course with much practical criticism; emphasis on the ability to understand and assess literary works from various points of view.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

### 398. SENIOR HONORS

Senior research, thesis option, by arrangement with Department and/or Honors Office. Credit, 1

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. Arrangement with Department and/or Honors Office. Credit, 1

## English

*Head of Department:* Professor David Cla  
*Associate Head, Professor Ernest Hofer, P*  
*fessor and Dean, Faculty of Humanities a*  
*Fine Arts, College of Arts and Sciences, Je*  
*miah Allen; Professors Achebe, Aczel, Ba*  
*Berlin, Brogan, Chametzky, Copeland, Cre*  
*Cuomo, Duckert, Emerson, Frank, Gibso*  
*Golden, Haven, J. Hicks, Hoopes, Junki*  
*Kaplan, Kinney, Koehler, Langland, Maria*  
*McCarthy, Mitchell, Musgrave, O'Donne*  
*Page, Plumstead, Porter, Rudin, Saagpak,*  
*Spivack, C. Spivack, Tucker, Weston,*  
*Wolff, Ziff; Adjunct Professors D. Freema*  
*Thelwell; Associate Professors Aho, Asht*  
*Barron, Beaty, Bell, Carey, Cheney, Clayt*  
*Collins, Donohue, L. Edwards, Egan, Fetler*  
*Freeman, French, Gallo, Gozzi, Hogan, Hor*  
*gan, J. Hunt, Leheny, Lowance, Moran, N*  
*son, Neugeboren, Noland, Paroissien, Pir*  
*ham, Politella, Raymond, Silver, Sitt*  
*Swaim, Tate, Turner, C. Wolff; Assiste*  
*Professors Baldwin, Culley, Current, D*  
*mond, DiMarco, Eidsvik, Farrell, Green, H*  
*rington, P. Hicks, Innes, Jayne, Jenkins, J*  
*gens, Keefe, Matlack, Quick, Reed, Robinso*  
*Shadoian, Smith, Whitehead; Part-tit*  
*Assistant Professor B. Hunt; Instructo*  
*Dubois, P. Edwards, Skerrett; Lecturer G*  
*Part-time Lecturers, Allan, Blasing, Tyn*  
*czko; Associate Dean Shaw.*

The English Department offers courses in the study of English and American literature courses in the relationship between literature and other disciplines and art forms, a courses in creative and expository writing. Innovative and experimental courses are taught under the rubrics of English 390-3 and 380-384. Descriptions of all courses are available shortly before preregistration at the English Department Undergraduate Study Office in Bartlett 252.

English majors are required to complete at least 30 credits of work in English courses numbered 201 and above. They are also required to complete one of the following distribution options:

**Option A: Approaches to Literature:** one course in literature of a period before 1800; one course in non-English literature; three of the four following kinds of courses: language, Shakespeare, major British or American author, literary genre.

**Option B: Major Authors:** two courses in masterpieces of western literature; two courses in major British writers; one course

Shakespeare. An exact list of which courses fulfill each of these categories is available in the Department's Undergraduate Studies Office.

The English major is encouraged to work within the flexible framework of the major to create a coherent program of study. The department offers concentrations within the major, such as American Civilization, Journalistic Studies, Creative Writing or Literature and Society; other concentrations are also available. Students seeking advice concerning their programs of study should go to Bartlett 472. Students who wish to become certified to teach secondary English must apply to the English Education office (Bartlett 474) for admission to the program; successful completion of the major requirements does not guarantee a place in the English Education program.

#### 1 (I), (II). MAN AND WOMAN IN LITERATURE (C)

Literature treating the relationship between man and woman. Topics may include the nature of love, the image of the hero and of the heroine, and definitions, past and present, of the masculine and the feminine. Readings may include works by Lawrence, Freud, Shakespeare, Cummings, Homer, the Brontes.

2 (I), (II). READING FICTION (C)  
An introduction to themes and techniques of fiction through a reading of selected short stories and novels with emphasis on such matters as structure, style, point of view, and the like.

3 (I), (II). READING POETRY (C)  
An introduction to themes and forms of poetry through a reading of selected poems in English. Emphasis on such poetic techniques as word choice, imagery, and structure, and on such modes as the ballad, lyric, sonnet, ode and dramatic monologue.

4 (I), (II). READING DRAMA (C)  
An introduction to themes and techniques of drama through a reading of selected plays. Emphasis on such matters as structure, style, staging, and tragic and comic modes.

5 (I), (II). NATURE AND LITERATURE (C)  
Literature that deals with man's relationship to his environment. Topics may include changing conceptions of nature, changing attitudes toward nature. Readings may include works by Conrad, Darwin, Thoreau, Shakespeare, Frost, Homer, Faulkner.

6 (I), (II). LITERATURE AND REALITY (C)  
Literature that deals with man's attempt to understand what is real, what is illusory, what visions are profitable, necessary, dangerous. Readings may include works by Cervantes,

Virginia Woolf, Plato, Shakespeare, Wallace, Stevens, Kerouac.

#### 201 (I), (II). MAJOR BRITISH WRITERS I (C)

Students read, discuss and write about such major authors or works as *Beowulf*, Chaucer, Spenser, Donne, and Milton.

#### 202 (I), (II). MAJOR BRITISH WRITERS II (C)

Students read, discuss and write about such major authors as Pope, Wordsworth, Browning, Eliot, and Yeats.

#### 203 (I), (II). THE BIBLE: MYTH, LITERATURE AND SOCIETY

The several main genres of Biblical literature in their historical setting; attention to the principles of literary, mythological, and sociological interpretation; the literary influence of the Authorized Version.

#### 213 (I). EARLY ENGLISH LITERATURE IN TRANSLATION (C)

Readings (in translation) of works from English literature before 1100 A.D. Religious and social ideas of the period as reflected in several types of poetry. Introduction to Old English prose.

#### 214 (II). MIDDLE ENGLISH LITERATURE EXCLUSIVE OF CHAUCER (C)

Readings of selected works written in the later Middle Ages in England, exclusive of Chaucer's.

#### 215 (I). CHAUCER'S *TROILUS AND CRISEYDE* AND OTHER LOVE POEMS (C)

The complaints, dream visions, later short poems, the translation of Boethius, and *Troilus* as combinations of medieval art and thought with pre-Renaissance motifs.

#### 216 (II). CHAUCER'S *CANTERBURY TALES* (C)

A close study of the General Prologue and representative tales as examples of the poet's mature techniques and extraordinary realism.

#### 221 (I). SHAKESPEARE (C)

Examination of Shakespeare's dramatic art and leading ideas through a study of approximately a dozen plays.

#### 222 (II). SHAKESPEARE (C)

Same method as 221 but with a different group of plays. Either semester or both may be taken for credit.

#### 225 (I). 16TH CENTURY ENGLISH LITERATURE (C)

Selections from the non-dramatic prose poetry of the early English Renaissance through the Age of Elizabeth, including such writers as Skelton, Wyatt, Surrey, More, Gascoigne,

Spenser, Sidney, Raleigh, Marlowe and Shakespeare. Emphasis on the rise of humanism.

#### 226 (II). ELIZABETHAN AND JACOBEAN DRAMA (C)

The drama of the English Renaissance. Selected works by several major Elizabethan and Jacobean playwrights, including Marlowe, Jonson, Chapman, Middleton, Webster, and Ford. Emphasis on the artistic and intellectual character of the English Renaissance as reflected in drama.

#### 233 (I), (II). 17TH CENTURY ENGLISH LITERATURE (C)

Selections from the poetry and prose of the late Renaissance in England, including works by such authors as Donne, Jonson, Browne, Burton, Marvell, and Milton. Emphasis on the challenge of the new science to the traditional humanism.

#### 236 (I), (II). MILTON (C)

Development of the mind and art of Milton as a figure of the English Reformation and the late Renaissance. Emphasis on *Paradise Lost*.

#### 238 (I). ENGLISH LITERATURE OF THE RESTORATION (C)

Drama, prose, and poetry of the later 17th century, illustrating the thinking of the period that gave rise to great comedy and satire. Emphasis on such figures as Dryden, Butler, Wycherley, Rochester, and Congreve.

#### 241 (I). ENGLISH LITERATURE OF THE 18TH CENTURY (C)

The literature of the Augustan Age. Emphasis on Swift and Pope.

#### 242 (II). ENGLISH LITERATURE OF THE 18TH CENTURY (C)

The literature of the later 18th century, with emphasis on the Johnson Circle. A continuation of 241; may be elected independently.

#### 243 (I), (II). THE RISE OF THE NOVEL (C)

Significant representative novels, including works of such authors as Richardson, Fielding, Sterne, Smollett and Austen.

#### 251 (I). THE ROMANTIC POETS (C)

The Romantic Movement as revealed in the poetry of Wordsworth, Coleridge, and the other early Romantics.

#### 252 (II). THE ROMANTIC POETS (C)

The Romantic Movement, with particular attention to Byron, Shelley, and Keats.

#### 253 (I), (II). THE ENGLISH NOVEL FROM SCOTT THROUGH HARDY (C)

The reading and discussion of significant representative novels, including works of such authors as Dickens, Thackeray, the Brontes, Eliot, and Hardy.



255 (I). ENGLISH PROSE OF THE  
ROMANTIC PERIOD (C)

The techniques and ideas of the chief prose writers (from 1798 to 1837), including Wordsworth, Coleridge, Lamb, Hazlitt, DeQuincey, and the early Carlyle.

256 (II). ENGLISH LITERATURE OF THE  
VICTORIAN AGE (1837-1900) (C)

Prose and poetry of several major figures: Carlyle, Macaulay, Newman, Mill, Tennyson and Browning.

257 (I), (II). ENGLISH LITERATURE OF  
THE VICTORIAN AGE (1837-1900) (C)

Prose and poetry of Ruskin, Mill, Huxley, Pater, Arnold, Wilde, Rossetti and the Pre-Raphaelite Brotherhood. A continuation of 256; may be elected independently.

261 (I). THE MODERN NOVEL: 1890-1930  
(C)

The expanding form of the novel and increasing interest in social causes as exhibited in some twelve novels.

262 (II). THE MODERN NOVEL: 1930-1960  
(C)

Analysis of some twelve novels. A continuation of 261, but may be elected independently.

263 (II). MODERN BRITISH AND  
AMERICAN DRAMA (C)

Representative dramatists since the late 19th century, including Shaw, O'Casey, O'Neill, Williams, and others. Emphasis on trends in 20th-century dramatic art.

264 (I). MODERN EUROPEAN DRAMA (IN  
TRANSLATION) (C)

Major modern dramatists beginning with Ibsen and including Chekhov, Pirandello, Strindberg, Giraudoux. Emphasis on comparative currents in various European nations.

265 (I). 20TH-CENTURY LITERATURE OF  
IRELAND IN ENGLISH (C)

Nineteenth-century background; the Irish Renaissance; such major figures as Yeats, Synge, Joyce, and O'Casey; recent and contemporary writing.

266 (I), (II). MODERN POETRY (C)

20th-century poetry to 1945; such authors as Hardy, Hopkins, Whitman, and Emily Dickinson.

267 (I), (II). CONTEMPORARY POETRY  
(C)

Poetry in English since 1945.

268 (I), (II). JAMES JOYCE (C)

Majors work of James Joyce in prose, drama, and lyric poetry, emphasizing *Ulysses* or *Finnegans Wake*.

271 (I). EARLY AMERICAN LITERATURE  
(C)

From the Puritan, Colonial, and Federalist periods. Authors include Edward Taylor, Cotton Mather, Jonathan Edwards, John Woolman, Benjamin Franklin, Charles Brockden Brown, Philip Freneau, and Washington Irving.

272 (I), (II). AMERICAN POETRY (C)

American poetry from 1800 to the emergence of a modern style early in the 20th century.

273 (I), (II). 19TH-CENTURY AMERICAN  
LITERATURE (C)

Significant productions in expository prose, fiction, and poetry; the emergence of an American literature.

274 (II). 20TH-CENTURY AMERICAN  
LITERATURE (C)

Movements, modes, and representative voices in prose, fiction, and poetry. A continuation of 273; may be elected independently.

275 (I), (II). MAJOR AMERICAN WRITERS  
(C)

Emerson, Hawthorne, James, and any of the following by announcement each semester: Howells, Adams, Dos Passos, Lewis, Anderson, Fitzgerald, Hemingway.

276 (I), (II). MAJOR AMERICAN WRITERS  
(C)

Thoreau, Melville, Whitman, and any of the following by announcement each semester: Cooper, Poe, Dickinson, Twain, Crane, Dreiser, Faulkner, Wolfe.

280 (I), (II). INTRODUCTION TO  
FOLKLORE (C)

Beginning with the ballad as the nucleus of other folklore genres.

281 (II). AMERICAN FOLKLORE (C)

Oral traditions in America, with emphasis on surviving British lore, American Indian lore, Negro lore, and recent folk materials.

282 (I). LITERARY CRITICISM: CLASSIC  
AND NEO-CLASSIC (C)

An introduction to literary criticism; emphasis on the major philosophical critics from Plato and Aristotle to the 19th century.

283 (II). MODERN LITERARY CRITICISM  
(C)

Theories and techniques of modern criticism; emphasis on the 20th century.

284 (I). LITERATURE AND  
PSYCHOLOGICAL CRITICISM (C)

An examination and application of theories and techniques of psychological criticism to selected works of literature. The theoretical focus is psychoanalytic (Freudian); other theories (Jungian, phenomenological, existential) used as time permits.

287 (I), (II). WOMAN AS HERO (C)

The concept of heroism as modified or developed in literary works having women as central characters.

288 (I). THE POLITICAL NOVEL (C)

Relationships between politics and the novel. Political setting vs. political meaning. Social change, power politics and institutions, and the personal dilemma. Emphasis on literary analysis and class discussion.

289 (I). FILM AND LITERATURE (C)

The historical, formal, and aesthetic relationships between literature and the cinema. Emphasis on problems raised in literary aesthetics as a result of film.

312 (I), (II). HISTORY OF THE ENGLISH  
LANGUAGE

The development of English; vocabulary and usage levels, grammars, and dictionary. Attention to matters crucial to the teaching of English in secondary schools.

321 (I). STRUCTURE OF MODERN  
ENGLISH

Introduction to applied English linguistic sounds, forms, and word-order of modern Standard American English; modern grammatical theory.

331 (I), (II). TECHNICAL WRITING

For majors in engineering. Factual and inductive exposition, with emphasis on research, federal, and industrial reports. 2 class hours. Credit, 1.

334 (II). ADVANCED TECHNICAL  
WRITING

Case studies in engineering and industrial reporting and in the writing of technical and professional articles.

337 (I), (II). EXPOSITORY WRITING

The writing of informative prose in the form expected in the students' major fields: report articles, essays.

339 (I), (II). ARTICLE WRITING

Magazine journalism combined with instruction in writing feature or magazine article. Prerequisite, permission of instructor at pre-registration.

341 (I), (II). CREATIVE WRITING

Intensive practice in writing prose fiction, poetry, and occasionally other forms, supplemented by discussion of ideas and technique in contemporary literature.

345 (I or II per demand). CREATIVE  
WRITING

A continuation of 341, with emphasis on fiction. Prerequisite, a grade of B or better ENGL 341.



35 (I or II per demand). **CREATIVE WRITING**

Continuation of 341, with emphasis on poetic imagination. Prerequisite, a grade of B or better in ENGL 341.

37 (I or II per demand). **CREATIVE WRITING**

Continuation of 341 with emphasis on drama. Prerequisite, a grade of B or better in ENGL 341. Note: ENGL 345, 346, and 347 may be repeated for credit.

39 (I). **THE ENGLISH LYRIC (C)**

The lyric as a personal expression of the poetic imagination within a continuing tradition. Important forms of the lyric, such as sonnet, elegy, and ode; examples selected from the whole range of poetry in English.

41 (I). **THE ENGLISH EPIC TRADITION (C)**

Substantial readings in three or four long English poems (such as *Beowulf*, *Forerime*, *Geene*, *Paradise Lost*, *The Prelude*) against the background of classical epic (e.g., *The Iliad*, *The Aeneid*). Emphasis on the ways in which each poet employs traditional epic motifs as a means of defining his own contemporary vision of man and society.

43 (I). **TRAGIC DRAMA (C)**

Examination of plays (mostly Greek, Elizabethan and modern) and critical theories (modern, but with attention to Aristotle and Hegel) in an attempt to sharpen perception of the genre "tragedy."

45 (II). **PROSE FICTION (C)**

The substance and theory of prose fiction. Students may read works that illustrate the range of possibilities within the genre, works that seek to extend the limits of the genre, or works that illustrate one or more types of fiction, such as the historical novel, the novel of manners, the picaresque novel, or the regional novel.

47 (II). **SATIRE, THEORY AND PRACTICE (C)**

Theory and practice of satire, drawing upon a wide range of representative works, largely British and American, from several periods, including novels, short stories, poems, plays and essays, as well as songs, graphics, and when available, film.

49 (I), (II). **ASPECTS OF LITERATURE (C)**

An aspect of literature in English, both British and American, including literary movements, the relations of literature to particular cultural developments, and the thematic criticism.

51 (I), (II). **ASPECTS OF BRITISH LITERATURE (C)**

An aspect of British literature. Specific subject announced at pre-registration.

382 (I), (II). **INDIVIDUAL BRITISH AUTHORS (C)**

Intensive study of one British author, announced at pre-registration.

383 (I), (II). **ASPECTS OF AMERICAN LITERATURE (C)**

An aspect of American literature, announced at pre-registration.

384 (I), (II). **INDIVIDUAL AMERICAN AUTHORS (C)**

Intensive study of one American author, announced at pre-registration.

385, 386. **INDEPENDENT STUDY**

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

387 (I), (II). **ADVANCED SHAKESPEARE STUDIES (C)**

Advanced study of Shakespeare within the frame of specific topics which will vary from semester to semester. Restricted to students who have taken ENGL 221 or 222.

391 (I), 392 (II). **SEMINAR**

Normally, several seminars each semester. Topics and instructors announced at pre-registration. For majors, but open to others. Prerequisite, permission of instructor at pre-registration.

393 (I) or (II). **WRITING SEMINAR**

Writing for publication and training in editing related to professional and to University student publications. Prerequisite, permission of instructor at pre-registration. 2 class hours, 1 laboratory period.

398. **SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4

399. **SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

**Journalistic Studies**

Journalistic Studies offers a joint major with the English Department. The major takes a minimum of 15 hours of Journalistic Studies credits and 24 hours of English credits.

200. **INTRODUCTION TO NEWSWRITING AND NEWS REPORTING**

The basic techniques of journalism, print and broadcast. A laboratory course. Students report and write under immediate professional supervision.

201 (I), (II). **INTRODUCTION TO MASS COMMUNICATION**

The communications revolution and freedom of the press, the communication process,

methods of reporting and writing and communication theory.

202 (I), (II). **LANGUAGE AND COMMUNICATION**

Analysis of several approaches of language study, with emphasis on improving journalistic style.

208 (I or II as enrollment warrants).

**COMMUNICATIONS THEORY**

Introduction to journalism as a social and behavioral science concerned with the way in which communications are arranged in our society.

210 (I or II as enrollment warrants).

**INTERNATIONAL COMMUNICATIONS**

Comparative study of mass media in countries other than the United States; the flow of communications among nations.

385, 386. **SPECIAL PROBLEMS**

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

391 (I), (II). **SEMINAR**

Normally, several seminars each semester. Topics and instructors announced at pre-registration. For majors, but open to others.

392 (II). **FREEDOM OF THE PRESS**

Seminar in freedom of the press; its history, major theories, key cases in Anglo-American law, and recent trends toward redefinition.

398. **SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

399. **SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

**French & Italian**

Chairman of Department: Professor Michelle Dufau.

**FRENCH**

Professors Carrière, Cassirer, P. Johnson, R. Johnson, Mankin, Taylor, Weiner; Associate Professors Busi, Chen, Garaud, Gugli, O'Connell, Porter, Raymond, Rountree, Smith, Sturm; Assistant Professors Berwald, Bragger, Braude, Dugas, Fenoaltea, Lamb, Martin, Santerre; Instructor Tedeschi.

The basic French major, designed for students primarily interested in continuing their studies in graduate school, is supplemented by several extra-departmental options as well as the traditional program designed principally for

those who wish to teach in elementary or secondary schools. The options include a Certificate in Business Administration, Journalism Studies, Western European Studies, Social Thought, and Interpreter's Studies. Additional information may be obtained from Professor Micheline Dufau, Department Chairman.

**110, 120. ELEMENTARY FRENCH**  
For those with no previous creditable training in French. Intensive practice in the four language skills. 3 class hours, 2 laboratory periods.

**111, 121. ELEMENTARY FRENCH FOR VOICE MAJORS.**  
Special sections of 110 and 120.

**123 (I), (II). INTENSIVE REVIEW OF FRENCH**  
Intensive review of French for those who are not ready for third semester work.

**126 (I), (II). INTENSIVE ELEMENTARY FRENCH**  
For those with no previous training in French. Intensive practice in the four language skills.  
*Credit, 6.*

**130 (I), (II). INTERMEDIATE FRENCH**  
Intensive study and review. Readings in modern French literature. Normally, a section for Franco-Americans is offered. Prerequisite, either FRENCH 123 or 126, or equivalent.

**131 (I), (II). INTERMEDIATE FRENCH: ORAL**  
A third semester course for those primarily interested in developing their oral skills in French.

**132 (I). INTERMEDIATE FRENCH: HONORS or MAJORS**  
For honor students and majors. Intensive review of grammar with emphasis on all four skills.

**141 (I), (II). INTERMEDIATE FRENCH: ORAL**  
A continuation of 131.

**142 (I), (II). INTERMEDIATE FRENCH: HONORS or MAJORS**  
For honor students and majors. Stresses composition as well as reading and discussion.

**144 (I), (II). INTERMEDIATE FRENCH: FICTION**  
Stresses the reading of contemporary fiction.

**145 (I), (II). INTERMEDIATE FRENCH: READINGS IN THE HUMANITIES**  
Stresses reading of non-fiction.

**146 (I), (II). INTENSIVE INTERMEDIATE FRENCH**  
Covers third and fourth semesters in one.  
*Credit, 6.*

**147 (I), (II). INTERMEDIATE FRENCH: READINGS IN THE SOCIAL SCIENCES**

**148 (II). INTERMEDIATE FRENCH: READINGS IN MATHEMATICS AND SCIENCES**

**150. LANGUAGE AND LITERATURE (C)**  
Intensive study of short literary texts beyond the intermediate level for students not prepared to take FRENCH 171, 172, but who desire to further develop the four language skills. Prerequisite, a FRENCH 140 level course. 3 class hours, 1 laboratory session.

**151. INTERMEDIATE GRAMMAR REVIEW**  
For students who feel the need of formal French grammar beyond the intermediate level.

**161 (I), (II). ORAL FRENCH, PHONETICS AND PHONEMICS**  
Intensive practice of French pronunciation through a knowledge of its sound system.

**162 (I), (II). CONVERSATION**  
Practice in conversational French. Prerequisite, FRENCH 161.

**171 (I), (II). GREAT WORKS — POETRY, NOVEL (C)**  
Selected complete works of several periods in poetry and novel. Prerequisite for advanced courses in French.

**172 (I), (II). GREAT WORKS — THEATER, ESSAY (C)**  
Selected complete works of several periods in non-fiction and the theater. Prerequisite for advanced courses in French.

**261 (I), (II). ADVANCED GRAMMAR**  
For students who feel the need of more formal French grammar beyond the intermediate level.

**262 (I), (II). ADVANCED CONVERSATION**  
Additional oral practice for students who have completed FRENCH 161-162. (Students who have completed 161 and who have a strong background in oral production may be excused from 162 by permission of the Department.)

**263 (I), (II). FRENCH COMPOSITION**  
Advanced composition, required of French majors.

**264 (I), (II). COMPOSITION AND TRANSLATION**  
Advanced composition and translation; required of French majors.

**265 (I). BUSINESS FRENCH**  
Familiarizes students with and teaches

expression of the vocabulary and terminology of French business and financial language. Prerequisite, good command of French.

**270 (I) or (II). THEMES IN FRENCH LITERATURE (IN TRANSLATION) (C)**  
A given theme in French literature as illustrated in a series of translated works. The theme is announced in advance. Not to be taken for major credit in French.

**271 (I). FRENCH CIVILIZATION**  
French civilization to 1800. Designed for intelligent understanding of the literature and thought of France through a knowledge of its background.

**272 (II). FRENCH CIVILIZATION**  
Designed for an intelligent understanding of contemporary French literature through knowledge of its recent background.

**273 (II). FRANCOPHONE CIVILIZATION OUTSIDE FRANCE (C)**  
Introduction to common characteristics and problems of francophone areas of Canada, West Indies, Africa, Switzerland, and Belgium. May be taken for major credit in French only when taught in French.

**274 (I) or (II). MASTERPIECES IN TRANSLATION (C)**  
The vision of man in French literature from the Renaissance to the 20th century. Not to be taken for French majors or to students who have completed either FRENCH 171 or 172.

**299. SPECIAL TOPICS**  
Different topics offered for one semester only. Inquire in the French Department for further information.

**301, 302. FRENCH LITERARY MOVEMENTS**  
The characteristics and definitions of a selected movement or period (e.g., Baroque, Romanticism) in French literary history.

**303. EXPLICATION DE TEXTES**  
The principles of textual analysis and practice in that exercise. Required of students in Teacher Training.

**304. THE ART OF LITERATURE**  
The structure of the literary works of France with emphasis on the esthetic.

**311 (I) or (II). INTRODUCTION TO MEDIEVAL FRENCH LITERATURE**  
Representative masterpieces from the various genres, read in modern French translation. Relation of literature to other aspects of medieval culture.

- 4 (I). FRENCH PROSE OF THE RENAISSANCE  
Renaissance French prose. Rabelais, Bonaventure des Periers, Marguerite de Navarre, Montaigne, Les Estienne, Montaigne.
7. (II). FRENCH POETRY OF THE RENAISSANCE  
Renaissance French poetry. Marot, Sceve, Du Bellay, Du Bellay, Ronsard, Belleau, Baillet, Grippa d'Aubigné, Du Bartas, Sponde.
1. COMIC VISION — 17TH CENTURY  
Representative works of the classical period with a comic vision of society in prose and poetry; Molière, La Fontaine, La Bruyère and others.
2. TRAGIC VISION — 17TH CENTURY  
Examples of the classical tragic vision in the theater and the novel; Corneille, Racine, Mme. de La Fayette.
4. PHILOSOPHERS AND MORALISTS OF THE 17TH CENTURY  
Writers whose ideas are most important in classical thought; Descartes, Pascal, La Rochefoucauld and others.
4. FRENCH LITERATURE OF THE 18TH CENTURY  
Development of ideas of the French Enlightenment.
5. FRENCH NOVEL OF THE 18TH CENTURY  
The satirical novel as represented by LeSage, Montesquieu, Voltaire, and Diderot, and the sentimental novel as represented by Prevost, Marivaux, Rousseau and Bernardin de Saint-Pierre.
9. FRENCH DRAMA OF THE 18TH CENTURY  
Findings in French theater from LeSage to Beaumarchais.
9. THEMES IN 19TH CENTURY FRENCH POETRY  
In-depth consideration of themes in 19th century French poetry such as nature, the religious experience, the role of the poet, romantic imagery, etc. Themes vary from semester to semester.
3. PARNAISSIANS AND NERVAL  
Development of poetry between Romanticism and Symbolism.
3. 19TH CENTURY ROMANTIC NOVEL  
The novel of the first half of the century; Chateaubriand, Balzac, Hugo, Dumas, Stendhal.
3. 19TH CENTURY REALISTIC-NATURALISTIC NOVEL  
The novel of the second half of the century from Flaubert to Zola.
347. FRENCH POETRY OF THE EARLY 19TH CENTURY  
Nineteenth century French Romantic poetry: Lamartine to Hugo.
348. SYMBOLIST POETRY  
The poetry of Baudelaire, Rimbaud, Mallarmé, Verlaine.
349. FRENCH THEATER OF THE 19TH CENTURY  
Development of theater from Hugo to Rostand and his contemporaries.
354. LITERATURE IN FRENCH FROM AFRICA AND THE CARIBBEAN  
Survey of contemporary literature written in French by African writers, and its literary and ideological background.
355. MAJOR FIGURES OF THE CONTEMPORARY FRENCH NOVEL I  
Novels of Romain Rolland, Martin du Gard, Duhamel, Gide, Proust, Montherlant, Giraudoux.
356. MAJOR FIGURES OF THE CONTEMPORARY FRENCH NOVEL II  
Novels of Malraux, Camus, Sartre, Simone de Beauvoir, Bernanos, Mauriac, and Julien Green.
357. CONTEMPORARY FRENCH POETRY — 20TH CENTURY  
Major French poets from the turn of the century to Surrealism. A study of Valéry, Apollinaire, Claudel, Reverdy, Eluard, Desnos, Cendrars, and the beginnings of Surrealism with the first manifesto in 1924.
358. CONTEMPORARY FRENCH POETRY — 20TH CENTURY  
French poetry from Surrealism to the present: Breton, Char, Michaux, Perse, Ponge, Bonnefoy, and selected contemporary poets. Surrealism as a movement in itself and as a precursor of more recent poetry.
359. FRENCH THEATER — 20TH CENTURY  
French theater from Scribe to the present.
- 360 (II). TECHNIQUES OF CONSECUTIVE INTERPRETATION  
Acquisition of basic skills in consecutive interpretation through notetaking, pacing, condensing, paraphrasing, and practice in memorization. Workshop course based on oral practice. No written work. Admission by permission of instructor.
361. APPLIED FRENCH LINGUISTICS  
French linguistics applied to the teaching of French in secondary schools.
362. BASIC METHODS  
An introduction to audio-lingual techniques of teaching French at the secondary level (EDUC 307).
363. ADVANCED METHODS  
Methods of teaching intermediate and advanced French at the secondary level. The second of a two-semester sequence devoted to teaching French. Prerequisite, FRENCH 362 (EDUC 307).
- 367 (I). TECHNIQUES OF SIMULTANEOUS INTERPRETATION  
Acquisition of basic skills in simultaneous interpretation through close study of comparative syntax and practice in the Language Laboratory. Admission by permission of instructor.
373. AUTOBIOGRAPHY IN FRENCH LITERATURE  
Autobiographical works in historical perspective from Rousseau to present. Emphasis on psychological and philosophical problems such as self-knowledge, sincerity, authenticity, truth. Prerequisites, ability to read French. Non-French majors may use English. (SOWEST 301).
- 374 FRENCH-CANADIAN LITERATURE  
Survey of contemporary literature written in French by Canadian poets, novelists and dramatists.
- 385, 386. SPECIAL PROBLEMS  
Individual study of a selected problem for qualified students. By arrangement with members of this department. Credit, 1-6.
- 391, 392. SENIOR SEMINAR  
French literature for advanced students. Subject announced the preceding semester. Credit, 1-3.
398. SENIOR HONORS  
Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.
399. SENIOR HONORS  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.
- ITALIAN  
Professor Tillona; Associate Professor Sturm; Assistant Professors Evans, Fata, Pallucchini, Terrizzi.  
  
Information on the Italian curriculum may be obtained by contacting the Department of French and Italian.
- 110, 120 (I), (II). ELEMENTARY ITALIAN  
For students with no previous creditable training in Italian. Intensive practice in language skills.
- 126 (I), (II). INTENSIVE ELEMENTARY ITALIAN  
For students with no previous creditable training in Italian.



ing in Italian. Intensive training in all language skills. Equivalent of 110, 120. Credit, 6.

130, 140 (I), (II). **INTERMEDIATE ITALIAN**  
For students with one year of college Italian or equivalent. Training in the language skills; emphasis on speaking and understanding; readings in cultural and literary texts.

146 (I), (II). **INTENSIVE INTERMEDIATE ITALIAN**  
For students with one year of college Italian or equivalent. Reinforcement of basic language skills, further training in all skills. Reading and discussion of literary and cultural texts. Equivalent of 130, 140. Credit, 6.

161 (I), 162 (II). **INTRODUCTION TO ITALIAN LITERATURE (C)**  
Close reading of representative works in Italian literature. Training in the techniques of literary analysis of the main literary forms. Prerequisite for advanced courses in Italian.

181 (I), 182 (II). **ORAL ITALIAN**  
Oral aspect of the language; pronunciation, vocabulary building, speeches, discussions, debates. This course may only be taken pass/fail.

250. **ITALIAN CIVILIZATION**  
Historical, literary, philosophic and artistic aspects of Italian civilization. Provides understanding of Italian life and culture.

255. **ITALIAN COMPOSITION**  
Advanced composition. Primarily for Italian majors; open to all qualified.

289. **ITALIAN LITERATURE IN TRANSLATION I (C)**  
Representative works of Italian literature through 1700. Not open to Italian majors.

291. **ITALIAN LITERATURE IN TRANSLATION II (C)**  
Representative works of Italian literature from 1700 to the present. Not open to Italian majors.

292. **DANTE IN TRANSLATION**  
The works of Dante Alighieri in English translation; emphasis on the *Divine Comedy*.

301 (I), 302 (II). **DANTE AND THE DUECENTO**  
Selections from the works of Dante and his contemporaries; intensive study of the *Divine Comedy*.

307. **BASIC METHODS**  
Introduction to audio-lingual techniques of teaching Italian at the secondary level and contrastive analysis of the structures of Italian and English (EDUC 307).

310. **PRE-HUMANISM AND THE EARLY RENAISSANCE**  
Literature of the 14th and early 15th centuries: Petracca, Boccaccio, Poliziano, Lorenzo, Sacchetti.

315. **THE HIGH RENAISSANCE**  
Literature of the late 15th and 16th centuries: Machiavelli, Castiglione, Ariosto, Tasso.

330. **ITALIAN LITERATURE OF THE 18TH CENTURY**  
Significant currents and authors from Goldoni to Alfieri.

335. **NEO-CLASSICISM AND ROMANTICISM**  
Intensive study of works of Foscolo, Leopardi and Manzoni.

340. **MODERN THEATER**  
Italian theater from Verga to the present.

345. **MODERN POETRY**  
Italian poetry from Carducci to the present. Emphasis on hermetism.

350. **ITALIAN NOVEL OF THE 19TH CENTURY (C)**  
Development of the novel from Verga to Sveve.

355. **ITALIAN NOVEL OF THE 20TH CENTURY (C)**  
Development of the novel from Pirandello to the present.

372. **STUDENT TEACHING**  
Credit, 3-12.

385, 386. **SPECIAL PROBLEMS**  
Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

391. **SEMINAR IN ITALIAN LITERATURE**  
Italian literature for advanced students. Subject announced the preceding semester.

398. **SENIOR HONORS**  
Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

399. **SENIOR HONORS**  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Germanic Languages and Literatures

Head of Department: Sigrid Bauschinger; Professors W. Malsch, Paulsen, Reed, Ryan; Associate Professors Beekman, Cathey, Lea, von Kries, Meid, Peter, Reh, Schiffer; Assistant Professors Hugus, S. Malsch, Seelig.

To fulfill an undergraduate major in German a student must take GERMAN 161 and complete 32 credits in the department's junior senior courses. Two programs are available. Program A (language) is designed principally for those who wish to teach in elementary secondary schools or for those whose interest is not primarily in literature; Program B (literature) is for those chiefly interested in continuing their studies in graduate school.

Students selecting Program A should take 161, 201, 202, 211, 221, or 222, 241, 242, 283, 2 or 285, and a minimum of two more courses in German, one of which must be in 20th-century literature (331, 332, 333, or 334). Students in Program A who are not planning to follow a teaching career may substitute another junior senior course for 283.

Students selecting Program B should take 161, 201, 202, 211, 221, 284, 321, 391, and the courses chosen from the following: 301, 303, 311, 312, 313, 331, 332, 333, and 334.

Students are urged to augment their coursework with at least one summer session at an approved summer school of German or by participating in a German program abroad such as the University offers in Freiburg, Germany.

## GERMAN

110, 120. **ELEMENTARY GERMAN**  
For the non-German major who has no previous training in German. Emphasis on understanding and reading. Sequence to be followed. GERMAN 110, 120, 130, 140. 3 class hours, 1 drill period.

112, 122. **ELEMENTARY CONVERSATIONAL GERMAN**  
For Honor students and prospective German majors, and those interested in intensive practice in the four language skills and who have no previous training in German. Emphasis on understanding and speaking. Sequence to be followed: GERMAN 112, 122, 132, 142. GERMAN 112, 136, 142. 3 class hours, 1 drill period.

126 (I). **INTENSIVE ELEMENTARY GERMAN**  
For non-German majors. Intensive training in all language skills. Equivalent of 110, 120 class hours. Credit.

130, 140. **INTERMEDIATE READING COURSE IN GERMAN**  
Intensive review and readings in modern German literature for the non-German major. Prerequisite, GERMAN 120 or equivalent.

132, 142. **INTERMEDIATE GERMAN**  
For Honor students and prospective German majors, and those interested in an intensive practice in the four language skills. Emphasis on speaking and reading. Intensive review. Readings and discussion (in German) of modern German literature. Prerequisite, GERMAN 130.

AN 122 or equivalent. Use of tape library in the language laboratory.

**6(II). ACCELERATED GERMAN**  
Recommended for Honor students and protective German majors. Accelerated course for students interested in intensive practice in the four language skills who are selected on the basis of superior achievement in GERMAN 122. Covers the contents of GERMAN 122 and 123. Emphasis on understanding and speaking. Students completing this course qualify for German 142. 6 class hours. Use of tape library in the language laboratory. Credit, 6.

**6(II). INTENSIVE INTERMEDIATE GERMAN**  
Thorough review for non-German majors of grammar, reading and discussion of literary texts; emphasis on the cultural background of German speaking countries. Equivalent of 130, 120. Prerequisite, GERMAN 120, 126, or advanced placement. 6 class hours. Credit, 6.

**13, 148. SCIENTIFIC GERMAN**  
Recommended for science majors. Intensive review. Readings in mathematics and natural sciences with exercises in translation from German into English. Prerequisite, GERMAN 120 or 122 or equivalent.

**1. FREIBURG PREPARATORY COURSE IN GERMAN**  
For students planning to attend the University of Freiburg Program the following year. Concurrent registration in a German language course required. Prerequisite, 120-level proficiency in German. Hours by arrangement.

**1. READINGS IN GERMAN LITERATURE (C)**  
An introductory course, intended to increase reading comprehension and fluency. Based on selected literary texts mainly from the 19th and 20th centuries. Prerequisites, 140 or equivalent (to be established by an examination administered by the department).

**2, 202. ADVANCED GERMAN**  
Advanced grammar, extension of vocabulary. Exercises in translation into German and in free composition and conversation. Prerequisite, GERMAN 142 or equivalent. 4 class hours. Use of tape library in the language laboratory. Credit, 4.

**2. ADVANCED COMPOSITION, TRANSLATION AND CONVERSATION**  
Continuation of 201 and 202. Emphasis on the writing of German (translation into German and free composition). Prerequisite, GERMAN 202 or equivalent. Use of tape library in the language laboratory. Credit, 4.

**2 (I). SURVEY OF GERMAN LITERATURE FROM 800 TO 1700 (C)**  
Prerequisite, GERMAN 161, 201 or equivalent.

**222. SURVEY OF GERMAN LITERATURE FROM 1700 TO THE PRESENT (C)**  
Prerequisite, 161, 201 or equivalent.

**231, 232. GERMAN MASTERPIECES IN TRANSLATION (C)**  
An introduction to selected masterpieces of German literature from the Middle Ages to the present. Different reading material in both semesters. Primarily for non-majors; majors may elect but not have major credit. May be repeated.

**241. GERMAN CIVILIZATION I (C)**  
The political and cultural development of Germany and her role in the European tradition from the beginning to 1648. Readings in German and English. Conducted in English. Prerequisite, GERMAN 140 or equivalent.

**242. GERMAN CIVILIZATION II**  
The political and cultural development of Germany and her role in the European tradition from 1648 to the present. Readings in German and English. Conducted in English. Prerequisite, GERMAN 140 or equivalent.

**283. METHODS OF TEACHING GERMAN**  
The various methods of teaching a foreign language based on recent developments of applied linguistics and programmed learning. Emphasized are: the development of teaching materials by the individual student and the application of textbooks to the needs of various language courses. Prerequisite, GERMAN 140 or equivalent.

**284. THE GERMAN LANGUAGE (C)**  
An introduction to the history of the German language. Prerequisite, GERMAN 140 or equivalent.

**285. THE STRUCTURE OF GERMAN**  
German phonetics and phonemics, with an introduction to German morphology. Prerequisite, GERMAN 140 or equivalent.

**301. LESSING AND HIS TIME (C)**  
The preclassical German literature of the 18th century with emphasis on Lessing. Prerequisite, GERMAN 161, 201, or equivalent.

**302. GOETHE (C)**  
A literary analysis of selected poems, plays and prose of the early and classical Goethe. Prerequisite, GERMAN 161, 201 or equivalent.

**303. SCHILLER (C)**  
Selected poems, plays, and essays by Schiller. Prerequisite, GERMAN 161, or 201 equivalent.

**311. THE GERMAN POEM (C)**  
An historical survey based on a close reading of selected poems from the major phases of German poetry after 1500. Prerequisite, GERMAN 161, 201 or equivalent.

**312. GOETHE'S FAUST (C)**  
Reading of Faust, Part I and selections of Part II. Prerequisite, GERMAN 161, 201 or equivalent.

**313. ROMANTICISM (C)**  
Poetry and prose of the Romantic period. Prerequisite, GERMAN 161, 201 or equivalent.

**321. 19TH CENTURY LITERATURE (C)**  
Poetry, drama and prose with emphasis on Kleist, Buchner, Heine, Keller. Prerequisite, GERMAN 161, 201 or equivalent.

**331. THE EARLY 20TH CENTURY (C)**  
Main literary trends at the turn of the century with emphasis on Hauptmann, Hofmannsthal, George, Rilke, and the early Thomas Mann. Prerequisite, GERMAN 161, 201 or equivalent.

**332. BRECHT AND MODERN DRAMA**  
Plays by Brecht, Frisch, Durrenmatt and Weiss. Prerequisite, GERMAN 161, 201 or equivalent.

**333. 20TH CENTURY PROSE (C)**  
Works by authors such as Thomas Mann, Kafka, Musil and Grass. Prerequisite, GERMAN 161, 201 or equivalent.

**334. CONTEMPORARY GERMAN LITERATURE**  
The contemporary literary scene in Germany. Prerequisite, GERMAN 161, 201 or equivalent.

**385, 386. SPECIAL PROBLEMS**  
Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

**391(II). SEMINAR**  
In-depth study of a particular author, problem, theme, or genre. For seniors; open to juniors by permission of instructor. Prerequisite, two literature courses on the 300 level. May be repeated for credit.

**398. SENIOR HONORS**  
Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

**399. SENIOR HONORS**  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## DANISH

**110, 120. ELEMENTARY DANISH**  
Conversation, reading, grammar and composition. 3 class hours, 1 laboratory hour.

**126(I). ACCELERATED ELEMENTARY DANISH**  
Covers the material of DANISH 110 and 120. 6 class hours, 1 laboratory hour. Credit, 6.



130, 140. INTERMEDIATE DANISH  
Reading, conversation, composition. Grammar review. Prerequisite, DANISH 120 or 126.

146 (II). ACCELERATED INTERMEDIATE DANISH

Covers the material of DANISH 130 and 140. Prerequisite, DANISH 120 or 126. 6 class hours. Credit, 6.

251. DANO-NORWEGIAN LITERATURE (C)

Masterpieces of Danish and Norwegian literature; with emphasis on Ibsen, Holberg; some attention to modern authors. Prerequisite, DANISH 140 or 146 or equivalent.

DUTCH

110, 120. ELEMENTARY DUTCH

Conversation, reading, grammar and composition. 3 class hours, 1 laboratory hour.

126 (I). ACCELERATED ELEMENTARY DUTCH

Covers the material of DUTCH 110 and 120. 6 class hours, 1 laboratory hour. Credit, 6.

130, 140. INTERMEDIATE DUTCH

Reading, conversation, composition. Grammar review. Prerequisite, DUTCH 120 or 126.

146 (II). ACCELERATED INTERMEDIATE DUTCH

Covers the material of DUTCH 130 and 140. Prerequisite, DUTCH 120 or 126. 6 class hours. Credit, 6.

251. DUTCH AND FLEMISH LITERATURE (C)

Masterpieces of Dutch and Flemish (Belgian) literature. Prerequisite, DUTCH 140 or 146 or equivalent.

268. MODERN DUTCH FICTION IN TRANSLATION

Masterpieces of modern and contemporary Dutch fiction in English translation. No knowledge of Dutch required.

SWEDISH

110, 120. ELEMENTARY SWEDISH

Conversation, reading, grammar and composition. 3 class hours, 1 laboratory hour.

126 (I). ACCELERATED ELEMENTARY SWEDISH

Covers the material of SWEDSH 110 and 120. 6 class hours, 1 laboratory hour. Credit, 6.

130, 140. INTERMEDIATE SWEDISH

Reading, conversation, composition. Grammar review. Prerequisite, SWEDSH 120 or 126.

146 (II). ACCELERATED INTERMEDIATE SWEDISH

Covers the material of SWEDSH 130 and 140.

Prerequisite, SWEDSH 120 or 126. 6 class hours. Credit, 6.

History

Chairman of Department: Professor Gerald W. McFarland. Professors Albertson, Bernhard, Boyer, Cantor, Chrisman, Davis, Gordon, Greenbaum, Hart, Ilardi, Johnston, Kirk, Lewis, Oates, Potash, Quint, F. Wickwire, Wyman; Associate Professors DePillis, Drake, Griffith, Hernon, Jones, Minear, Nissenbaum, Rearick, Richards, Sarti, Swartz, Tager, Thompson, Ware, M. Wickwire; Assistant Professors Bell, Berkman, Biddle, Fox, Laurie, Loy, Pelz, Shipley, Stepan, Story, Swenson, VanSteenberg, White.

History majors must take as required courses in their freshman and sophomore years two year-long sequences chosen from HIST 100-101 or 110-111, 115-116, 120-121, 130-131, 140-141 or 106-107, and 150-151 or 152-153. The history major will select one of five areas of specialization (European, British, American, Latin American, or East Asian history) and take within it a minimum of 8 courses numbered 200 and above (totalling not less than 24 credits). Students specializing in European history will be required to include in their program at least 3 credits in ancient or medieval history and an additional 3 credits in the early modern period (from the Renaissance through the 18th century). An additional two or three courses in electives outside the area of specialization are required, for a total of at least 12 courses (totalling not less than 36 credits) in lower and upper-level history courses. (A more complete statement of the requirements for the history major is available from the department.)

100 (I), 101 (II). HISTORY OF WESTERN THOUGHT AND INSTITUTIONS (C)

The historical development of the Western European countries, their ideas, and institutions. Either semester may be elected independently. Admission to honors sections of these courses (102, 103) by permission of department.

102 (I), (II), 103 (I), (II). HONORS SECTION OF HISTORY OF WESTERN THOUGHT AND INSTITUTIONS (C)

106 (I), 107 (II). HONORS SEMINAR IN MODERN EUROPEAN HISTORY (C)  
A thematic approach to the history of Europe since 1715. Open to Commonwealth scholars and selected students.

110 (I), 111 (II). PROBLEMS IN WORLD CIVILIZATION (C)

A comparative study of both the common and distinctive aspects of the world's great civilizations at critical phases of their development.

Either semester may be elected independently.

115 (I), 116 (II). HISTORY OF EAST ASIAN CIVILIZATION (C)

An introductory survey of China, Japan, and related regions. First semester: survey Chinese history; second semester: survey Japanese history. Either semester may be elected independently.

120 (I), 121 (II). HISTORY OF LATIN AMERICAN CIVILIZATION (C)

An introduction to the history of Latin America. First semester: from pre-conquest times to the close of the colonial era; second semester: the evolution of Latin America in the 19th and 20th centuries. Either semester may be elected independently.

130 (I), 131 (II). HISTORY OF NEAR EASTERN CIVILIZATION (C)

An introductory survey of Near Eastern Civilization. First semester: The rise and development of Islamic Civilization from 570 A.D. to 1453 A.D. with emphasis on social and intellectual developments. Second semester: The interpenetration of Near Eastern institutions, concepts, and interests with those of the West from the rise of the Ottoman Empire to the present.

140 (I), 141 (II). EUROPEAN HISTORY, 1500 TO THE PRESENT (C)

The historical development of Western European thought and institutions. First semester: from 1500 to 1815; second semester: 1815 to the present. History majors are strongly urged to take this course before registering in advanced European courses.

150 (I), 151 (II). THE DEVELOPMENT OF AMERICAN CIVILIZATION (C)

A survey of the American national growth. Either semester may be elected independently. Admission to honors sections of the courses (152, 153) by permission of department.

152 (I), 153 (II). HONORS SECTIONS OF THE DEVELOPMENT OF AMERICAN CIVILIZATION (C)

185 (I), 186 (II). NEW APPROACHES TO THE STUDY OF HISTORY (C)

Learning history by doing it. Each semester devoted to analysis of a single event; they have included the Salem witch trials and the Lizzie Borden murder case. Either semester may be elected independently.

200 (I). THE ANCIENT WORLD TO 500 B.C. (C)

From origins of human society to the confrontation with the Persian Empire.



2 (II). THE ANCIENT WORLD:  
PERICLES TO CONSTANTINE (C)  
The successive assertions and breakdowns of  
leadership in the Greek and Roman worlds.

2 (I). EARLY MIDDLE AGES, 300-1100  
(C)  
Spread of Christianity; pagan and early Chris-  
tian culture; Germanic kingship; the Carolin-  
gian world; early feudalism; monasticism and  
ecclesiastical centralization.

2 (I). THE LATER MIDDLE AGES,  
1100-1350 (C)  
Rivalry of towns and commerce; the growth  
and development of the feudal monarchies  
and ecclesiastical authority; rise of secular-  
ism.

20 (I), 206 (II). THE AGE OF THE  
RENAISSANCE AND  
REFORMATION, 1300-1600 (C)  
The changes in European thought and institu-  
tions during the development of Humanism  
and the Protestant and Catholic Reformations.  
Either semester may be elected independ-  
ently.

20 (I). EUROPE IN THE  
ENLIGHTENMENT, 1685-1789 (C)  
Civilization of Western Europe in the 18th  
century, its social milieu, intellectual setting,  
institutional forces, religious tendencies,  
aesthetic contributions, and the growth of the  
revolutionary spirit.

20 (II). THE FRENCH REVOLUTION  
AND NAPOLEON (C)  
Political change in Europe from the Old  
Rome and the French Revolution to the fall  
of Napoleon.

20 (II). HISTORY OF EUROPE, 1815-1870  
(C)  
Major developments in the internal and inter-  
national affairs of the European states from  
the Congress of Vienna to the Franco-Prussian  
War.

21 (I). EUROPE, 1870-1918 (C)  
Internal developments of the principal coun-  
tries; conditions and diplomacy which led to  
the World War; military and diplomatic his-  
tory of the war years.

21 (II). EUROPE SINCE 1918 (C)  
Major developments in the internal and inter-  
national affairs of the European states since  
World War I.

21 (I). EUROPEAN INTELLECTUAL  
HISTORY IN THE 19TH CENTURY  
(C)  
Chief intellectual currents in Europe; romanti-  
cism, liberalism, religious revival, socialism,  
Darwinism, racism, and mass culture.

213 (II). EUROPEAN INTELLECTUAL  
HISTORY IN THE 20TH CENTURY  
(C)  
Philosophical, academic, literary, aesthetic,  
political and popular currents since 1900. By  
permission of instructor.

214 (I), 215 (II). THE HISTORY OF RUSSIA  
(C)  
A survey of Russian political, social, eco-  
nomic, and intellectual history from the 9th  
century to the present. First semester: the ori-  
gin, growth, and development of Russia to  
1815; second semester: the impact of modern-  
ization on Russia in the 19th and 20th cen-  
turies. Either semester may be elected independ-  
ently.

216 (I). THE RUSSIAN REVOLUTION (C)  
Origins, course, and impact of the Bolshevik  
Revolution.

217 (II). SOVIET RUSSIA (C)  
Major social, political, intellectual develop-  
ments, and the international relations of  
Soviet Russia since the Bolshevik Revolution.

218 (I). EARLY MODERN GERMANY (C)  
From the end of the Thirty Years' War to the  
revolutions of 1848.

219 (II). THE HISTORY OF MODERN  
GERMANY (C)  
The evolution and development of Germany  
since 1848, with emphasis upon diplomatic,  
political, military and social-economic trends  
and problems.

220 (I). MODERN SCANDINAVIA (C)  
The major issues of domestic and foreign poli-  
tics of the states of northern Europe in the  
19th and 20th centuries.

221 (II). FRANCE SINCE 1789 (C)  
Selected, formative political crises from 1789  
to the present, and their settings in the eco-  
nomic, social, and intellectual life of modern  
France.

222 (I), 223 (II). THE HISTORY OF SPAIN  
(C)

224 (I). EUROPEAN DIPLOMATIC  
HISTORY, 1870-1914 (C)  
The internal politics and foreign policies of  
the major European powers. Emphasis on  
nationalism, liberalism, imperialism, alliance  
systems, and the origins of World War I.

225 (II). EUROPEAN DIPLOMATIC  
HISTORY, 1914-1956 (C)  
The internal politics and foreign policies of  
the major European powers. Emphasis on the  
importance of World War I, the polarization  
of national and international politics, the ori-  
gins, course, and aftermath of World War II,  
and the post-war world.

226 (I), 227 (II). MILITARY HISTORY OF  
MODERN EUROPE (C)  
Development of European military theory and  
practice. First semester: Napoleonic era to  
1914; second semester: 1914 to the present.

228 (II). 17TH CENTURY EUROPE (C)  
Europe from the Wars of the Counter-Refor-  
mation to the Glorious Revolution. Civiliza-  
tion of the Baroque in its social, political,  
economic, religious and intellectual settings.

229 (II). SOCIAL HISTORY OF EARLY  
MODERN EUROPE (C)  
The social institutions of Europe as they  
change from a system of feudal organization  
to pre-industrial society, including the evolu-  
tion of the town to the city, the changing role  
of the church, the changing role of agrarian  
life, the development of an intellectual class.

230 (II). HISTORY OF MODERN ITALY (C)  
From the origins of the Risorgimento in the  
18th century to the "opening to the left" of the  
1960s, with particular reference to domestic  
problems after the unification, to Italian for-  
eign policy up to the Second World War, and  
to the rise and consolidation of fascism.

231 (I), 232 (II). ENGLISH HISTORY (C)  
Emphasis on economic, social, and cultural  
influences, as well as on constitutional devel-  
opment. Either semester may be elected  
independently.

233 (II). MEDIEVAL ENGLAND (C)  
England from the 5th to the 15th century, with  
particular attention to the Anglo-Saxon  
period, the Norman Conquest, and the evolu-  
tion of government to the accession of the  
Tudors.

234 (I), 235 (II). TUDOR-STUART  
ENGLAND, 1485-1688 (C)  
Selected aspects of the constitutional, social,  
intellectual, and imperial history of England  
in this period. Either semester may be elected  
independently.

236 (I). BRITAIN IN THE 18TH CENTURY  
(C)  
Selected aspects of social, intellectual, imper-  
ial, and constitutional history, including the  
Acts of Union. Impact of the Industrial and  
French Revolutions.

237 (I), 238 (II). MODERN BRITAIN (C)  
Selected topics on the political, social, and  
intellectual development of Britain in the 19th  
and 20th centuries. Either semester may be  
selected independently.

239 (II). HISTORY OF THE BRITISH  
EMPIRE AND COMMONWEALTH  
SINCE 1783 (C)  
Evolution of British imperial policy; growth of  
the Dominions, the Commonwealth, and the

dependent Empire; role of the Empire in world politics.

**240 (I). SOCIAL HISTORY OF EUROPE SINCE THE FRENCH REVOLUTION (C)**

The appearance, disappearance, rise and fall and alteration of social classes and major subclasses during the period. The causes and results of such developments. The interrelationships of political, economic, and social developments; differences of social systems within the European framework and their reverberations.

**301 (II). ARGENTINA IN THE 19TH AND 20TH CENTURIES (C)**

The emergence of the major South American states. Political organization and economic change; the contemporary growth of nationalism and mass-based political movements.

**302 (I). THE HISTORY OF MEXICO (C)**

Mexico from the end of the 18th century to the present. Emphasis on political, economic, and social developments.

**303 (I). THE CARIBBEAN (C)**

The Caribbean as a focus of conflict and adjustment from the 15th century to the present.

**304 (II). HISTORY OF GRAN COLOMBIA (C)**

Colombia, Venezuela and Ecuador from colonial settlement to the present.

**305 (II). HISTORY OF THE ANDEAN REPUBLICS (C)**

Peru, Bolivia, and Chile from the late colonial period to the present. Emphasis on political, social and economic developments with particular attention to institutions.

**307 (I). THE HISTORY OF THE PORTUGUESE EMPIRE (C)**

The colonial empire Portugal created in Morocco, West Africa, Mozambique, India, Brazil, and the Far East — from the capture of Ceuta in 1415 until Portugal recognized the independence of Brazil in 1825. Comparative treatment of economic affairs, political institutions, race relations, and cultural developments.

**308 (II). THE HISTORY OF BRAZIL (C)**

The cultural, economic, and political development of Brazil since 1822. How the largest and most populous nation in Latin America has become a significant power.

**311. CHANGING INTERPRETATION OF UNITED STATES HISTORY (C)**

Changing interpretations of various topics in United States history from the evolution to the Cold War; the different historical schools which shaped those viewpoints — the roman-

tic nationalists, progressives, revisionists, consensus historians, and the new left. Prerequisite, a college-level survey of U. S. history or equivalent is strongly advised.

**316 (I). AMERICAN COLONIAL HISTORY TO 1763 (C)**

Discovery and exploration; early European settlements; system of political and economic control; religious and intellectual development; Anglo-French rivalry.

**317 (II). THE AMERICAN REVOLUTIONARY ERA (C)**

Coming of the Revolution; War for Independence; evolution of American federalism.

**318 (II). THE EARLY NATIONAL PERIOD, 1789-1828 (C)**

The development of the United States in its formative years, emphasizing political, intellectual, and diplomatic factors.

**319 (I). JACKSONIAN AMERICA (C)**

Political, economic, and social developments in the period before the Civil War.

**320 (I). THE CIVIL WAR ERA (C)**

The causes, execution, and consequences of the American Civil War. Emphasis on sectional conflict from the early national period to Southern secession in 1860-1861, to the nature and conduct of the war itself, and to the war's profound consequences.

**321 (II). THE RECONSTRUCTION ERA (C)**

Developments growing out of the nation's reunification following the Civil War. Reconstruction, not as an episode in Southern regional history, but as an integral part of postwar American political, economic, and social evolution.

**322 (II). THE GILDED AGE (C)**

The emergence of modern political issues during the final decades of the 19th century. Emphasis on the role of industrialization, corporate consolidation, urban growth, and labor, agrarian, and genteel protests.

**324 (I). THE PROGRESSIVE AGE, 1900-1920 (C)**

The political response to the changing economic and social conditions in American life.

**325 (II). THE UNITED STATES BETWEEN THE WORLD WARS, 1920-1941 (C)**

American political, economic, and intellectual life between the two World Wars.

**326 (I), 327 (II). AMERICAN THOUGHT AND CULTURE (C)**

The basic strands of American thought and their reflection in American culture. First semester: the period before 1865; second semester: Gilded Age and 20th century. Either semester may be elected independently.

**328 (I), 329 (II). UNITED STATES**

**CONSTITUTIONAL HISTORY (C)**

Origins and development of American constitutionalism. First semester: 17th century to outbreak of armed sectional conflict; second semester: evolution of constitutional power in modern America.

**330 (I), 331 (II). SOCIAL HISTORY OF THE UNITED STATES (C)**

The evolving status of individuals and groups and problems of migration, livelihood, urbanization, and social conflict. Either semester may be elected independently.

**332 (I). THE SOUTH IN AMERICAN HISTORY (C)**

From early settlement to contemporary regional problems.

**333 (II). HISTORY OF AMERICAN WESTWARD EXPANSION, 1763-1890 (C)**

Advance of settlement from the Appalachians to the Pacific and the influence of the frontier upon social, economic, and political conditions.

**334 (I), 335 (II). DIPLOMATIC HISTORY OF THE UNITED STATES (C)**

Development of American foreign relations, 1776 to the present. Either semester may be elected independently.

**336 (II). HISTORY OF THE AMERICAN LABOR MOVEMENT (C)**

Evolution of trade unionism in American history from late 18th century origins through 19th century Civil War developments to the present. Critical evaluation of changes in labor history.

**337 (II). THE CITY IN THE MODERN UNITED STATES (C)**

The industrial city and the full-scale urbanization of the modern United States. Effect of urban life on the social, political, and economic institutions of America. Emphasis on the historical origins of the problems of modern urban existence.

**338 (I, II). CONTEMPORARY AMERICAN HISTORY (C)**

American history from 1960 to the present with emphasis on historical perspective. Vietnam War, ecology, civil rights, student movements, growth capitalism, and changing social structures.

**339 (II). UNITED STATES SINCE PEACETIME HARBOR (C)**

Emphasis on political, economic, and social currents since World War II.

**340 (I). CIVILIZATION OF ISLAM I (C)**

The development of Islam from theocratic empire with emphasis on the evolution of Islamic law and theology, Arabic literature



Persian literature, Sufism, and Shiism from 1000 A.D. to 1200 A.D.

1 (II). CIVILIZATION OF ISLAM II (C)  
The emergence of non-Arabic peoples as the preponderant political influence in the Islamic world and the impact of these peoples on the institutions and traditions of Islam. The empires of the Persians, the Turks, and Muslim civilization in India, 1000 A.D. to 1600 A.D.

2 (II). THE MODERN MIDDLE EAST (C)  
The impact of the West on the Islamic empires to the present "confrontation" of the West and the Soviet Union of Arab and Israeli nationalism.

3 (I). HISTORY OF MODERN CHINA TO 1900 (C)  
Explores the nature of the "traditional" Chinese order inherited by China's alien Manchurian rulers; China's response to the West; the failure of rebellions; failure of conservative reform; disintegration of an ancient civilization. Prerequisites, HIST 115 and 116 or permission of instructor.

4 (II). HISTORY OF MODERN CHINA: THE 20TH CENTURY (C)  
Examines 20th century China's revolutions — intellectual, social, economic, political — and their settings up to the present. Prerequisites, HIST 115 and 116 or permission of instructor.

5 (I). HISTORY OF JAPANESE CIVILIZATION (C)  
The development of Japanese civilization from its origins to the mid-19th century.

6 (II). HISTORY OF MODERN JAPAN (C)  
Japan's modernization from the mid-19th century.

7 (I, II). HISTORY OF SCIENCE (C)  
Development of major scientific achievements from antiquity to the present. Emphasis on scientific theory; conceptual developments in philosophical, cultural, sociological, and scientific contexts. Prerequisite, one year of physical science.

8 (I, II). TOPICS IN ASIAN AND NEAR EASTERN HISTORY (C)  
Intensive study of an aspect of Asian or Near Eastern History; topic to be announced at pre-registration.

9 (I, II). TOPICS IN BRITISH HISTORY (C)  
Intensive study of an aspect of British history; topic to be announced at pre-registration.

10 (I, II). TOPICS IN EUROPEAN HISTORY (C)  
Intensive study of an aspect of European History. Topic to be announced at pre-registration.

383 (I, II). TOPICS IN LATIN AMERICAN HISTORY (C)  
Intensive study of an aspect of Latin American history; topic to be announced at pre-registration.

384 (I, II). TOPICS IN UNITED STATES HISTORY (C)  
Intensive study of an aspect of United States history; topic to be announced at pre-registration.

NOTE: 380-384 topics courses may be repeated for credit provided the topic under consideration is different on each occasion.

385 (I), 386 (II). SPECIAL PROBLEMS  
Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

395 (I, II). SENIOR SEMINAR  
For seniors specializing in history. Intensive study in area of specialization, with emphasis on research papers.

398. SENIOR HONORS  
Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4

399. SENIOR HONORS  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Linguistics

Head of Department: Professor Samuel Jay Keyser. Professors Bach, Freeman, Partee; Assistant Professors Prince, Roeper, Selkirk, Williams.

Although there is no undergraduate major in Linguistics, courses are offered for those wishing to prepare for graduate work in this field or in anthropology, computer science, English, the foreign languages, philosophy, or speech. Joint majors are offered in Linguistics and Philosophy, Linguistics and German, Linguistics and Russian, Linguistics and Chinese and Linguistics and Japanese, and several departments offer related courses.

101 (I), (II). MAN AND HIS LANGUAGE (C)  
A wide range of language-oriented topics: dialectal variants, language change and introduction to transformational grammar. Recent developments in linguistic theory; consequences of this theory for our view of mankind.

201 (I), (II). INTRODUCTION TO LINGUISTIC THEORY (C)  
The nature of language; important aspects of linguistic structure, viewed from the standpoint of modern linguistic theory. Emphasis

on syntactic problems; some attention to phonology, language acquisition, etc.

202 (I), (II). PHONOLOGICAL THEORY (C)  
Introduction to the theoretical and psychological bases of contemporary phonological processes, illustrated by problems chosen from the languages of the world. Prerequisites, LING 201 and 214.

203 (I), (II). INTRODUCTORY SYNTAX (C)  
The principles of contemporary linguistic theory applied to specific syntactic problems drawn mostly from English. The theoretical implications of the selected problems discussed in depth. Prerequisite, LING 201.

204 FIELD METHODS  
Methods of eliciting significant linguistic information in the field. How to work with an informant investigation, with the aid of the informant, of the structure of an unfamiliar language and of specific analytical problems it presents.

209. FORMAL FOUNDATIONS OF LINGUISTIC THEORY  
Topics in formal systems as they relate to modern linguistic theory including set theory, group theory, automata theory and formal grammars. Prerequisite, LING 201.

210. INTRODUCTION TO SEMANTICS (C)  
A survey of semantics in relation to linguistic theory. Development of semantics in transformational grammar, 1960-present. Applications of theory of formal systems from logic and connections with philosophy of language. Emphasis typically on quantification, referential opacity, other structural problems. Prerequisite, LING 203 and PHIL 370.

211 (I). INTRODUCTION TO PSYCHOLINGUISTICS (C)  
Its theoretical foundations, methodology, and experimental techniques. Emphasis on the acquisition of language, child language and linguistic universals, and learning and perceptual strategies. Prerequisite, LING 201.

213. SOCIOLINGUISTICS  
Language as a social phenomenon. Linguistic, sociological, and ethical issues related to language in its social context. The social interpretation of optional grammatical rules in dialectal variation.

214 (I), (II). INTRODUCTORY PHONETICS FOR LINGUISTICS  
Principles of the International Phonetic Association. Phonetic script. Identifying and making unfamiliar sounds. The structure of the vocal tract. Credit, 1.

241. STRUCTURE OF SANSKRIT  
Introduction to Sanskrit stressing its linguistically interesting aspects: the Sandhi rules of



Sanskrit, the Nala-saga in the Devanagari script, basic grammatical properties of Sanskrit. Prerequisite, LING 201.

### 323. STUDY OF THE NATIVE LANGUAGE

The relevance of linguistic theory and results of linguistics to the study of English. Issues of style, poetics, the teaching of English and others.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Music and Dance

*Head of Department:* Professor Robert Sutton.  
*Music Faculty:* Professors Alviani, Contino, duBois, King, Roach, Teraspulsy, Tillis; Associate Professors Chesnut, Fussell, Humphrey, Jenkins, Kaeser, Moore, J. Olevsky, Ornest, Steele, Stern, P. Tanner, Whaples; Assistant Professors Abercrombie, Boyer, Cox, d'Armand, Caver, Klock, Lehrer, E. Olevsky, Stackpole, J. Tanner; Lecturers Harry, Huettelman, Stencel; Visiting Instructor Neubert. *Dance Faculty:* Assistant Professors Patton, Peterson; Instructors Jones, Watkins; Lecturer Crescione.

### MAJORS IN MUSIC

A student must apply to the Music Department for admission to the major. An audition is required of all applicants. Maintenance of status as a major is subject to review and assumes satisfactory work in the program.

The Bachelor of Music degree may be earned with a concentration in 1) Performance, or 2) Theory-Composition, or 3) Music Education (Vocal or Instrumental).

The Bachelor of Arts degree with a major in music may be earned with a concentration in 1) Performance, or 2) Theory-Composition, or 3) Music History. The Bachelor of Arts programs are preprofessional, serving to broaden cultural background.

All music majors take applied music and work in large and small ensembles (four years), music theory (a three and a half year sequence), music literature and history (three semesters) and electives. The general education requirements for the Bachelor of Arts are the core requirements of the College of Arts and Sciences; those for the Bachelor of Music are the University core requirements.

The following are among the additional music courses required for each specific major program: extra applied music credits and a senior solo recital in Performance; teacher certification work in Music Education; advanced specialized courses in the particular field for majors in Theory-Composition or Music History. Up-to-date outlines for the eight semesters in each of the majors may be obtained by applying to the Department. The final selection of courses is made by counselling each individual student. Professor Horace Boyer is the Chief Adviser for undergraduate music.

Majors in other departments may elect a minor in music upon approval of the Chief Adviser of the Department of Music. The minor includes 111, 112, 201, 202, and 4 credits as advised in individual applied music and/or ensemble work. Education majors upon completing 111-112 should elect 242 (in lieu of 201).

The large and small ensemble organizations listed under Applied Music below, and other small ensembles specially arranged under 187, are open to all University students depending on any applicable audition requirements, space available, or permission of the instructor, who should in any case be consulted beforehand.

The Music Department is a member of the National Association of Schools of Music.

### CONCENTRATIONS IN DANCE

Students who wish to concentrate in Dance may register through the College of Arts and Sciences Information and Advising Center (CASIAC) in the Freshman and Sophomore years. The Bachelor's Degree with Individual Concentration (BDIC) may be arranged with a combination of emphases on Dance and one or more other subjects. Those interested in certification for teaching in public elementary and secondary schools should consider the option of a major in Physical Education with a high concentration of Dance courses. A major in Dance is being proposed and interested students should consult with the Dance faculty.

### MUSIC HISTORY AND APPRECIATION

#### 101 (I), (II). INTRODUCTION TO MUSIC (C)

Open to all students not majoring in music. Previous musical training not required. Basic music materials, principles of design, and cultural significance of representative works from the ninth century to the present.

#### 102 (I). LITERATURE OF MUSIC (C)

Review of music materials and principles of design. Emphasis on important examples of vocal music, keyboard music, chamber music, symphonies, concertos and operas. For music majors or by permission of instructor.

#### 108 (I). AFRO-AMERICAN MUSIC AND MUSICIANS (C)

Spirituals, blues, songs, jazz, and classic music of Afro-Americans.

#### 201 (I), 202 (II). HISTORICAL SURVEY OF MUSIC

History and literature of music: MUSIC 201 from early religious chant through Bach and Handel; MUSIC 202, from 1750 through vocal and instrumental music of the 20th century. Prerequisite, permission of instructor. MUSIC 112.

#### 203 (I). MUSIC FROM MONTEVERDI TO BACH

Baroque and Rococo periods, including music of such composers as Monteverdi, Schütz, Lully, Purcell, Corelli, Couperin, Rameau, and Scarlatti, Bach, Handel. Prerequisite, MUSIC 201 and permission of instructor.

#### 205 (I). GOTHIC AND RENAISSANCE MUSIC

Chant and organum through Renaissance motet and madrigal. Reading, listening, score study, analysis. Prerequisite, MUSIC 201 and permission of instructor.

#### 209 (I), (II). MUSIC OF THE 20TH CENTURY

European and American music written since 1900, including Stravinsky, Bartók, Hindemith, Copland, jazz, electronic music. Prerequisite, MUSIC 202 and permission of instructor.

#### 253 (I), (II). HISTORY OF JAZZ

The development of Jazz from its African origins and American influences to date. Topics include: ragtime; early New Orleans style; swing, Charlie Parker, John Coltrane and contemporary styles.

#### 301 (II). HAYDN, MOZART AND BEETHOVEN

Reading, listening, score study. Prerequisite, MUSIC 202 and permission of instructor.

#### 302 (II). MUSIC FROM SCHUBERT TO DEBUSSY

History of the 19th century romantic music: small and large forms, and various media including lieder, chamber music, symphony, opera. Reading, listening, score study. Prerequisite, MUSIC 202.

#### 303. HISTORY OF OPERA

History of opera from the late 16th to the present century. Prerequisite, permission of instructor.

### MUSIC THEORY

#### 111 (I), 112 (II). ELEMENTARY MUSIC THEORY (111:C)

Notation, ear-training, solmization, sight-reading, harmony, counterpoint, analysis

re and sound of music literature from all periods, orchestration, improvisation and original composition. Prerequisite, open to music majors and music minors upon approval of the Chief Adviser of the Department of Music. 111 prerequisite to 112. 3 class hours, 2 laboratory hours.

## 111 (I), 114 (II). INTERMEDIATE MUSIC THEORY

Continuation of 111, 112. Prerequisite, MUSIC 111. 113 prerequisite to 114. 3 class hours, 2 laboratory hours.

## 211 (I), 212 (II). ADVANCED MUSIC THEORY

Continuation of 113, 114. Prerequisite, MUSIC 111. 211 prerequisite to 212. 3 class hours, 1-2 laboratory hours as arranged.

212 (I). CONTEMPORARY TECHNIQUES  
Elimination of melody, rhythm, harmony, and form in 20th century music. Analysis, listening, and written assignments. Prerequisite, MUSIC 114. 2 class hours. Credit, 2.

213 (I), 220. JAZZ THEORY AND IMPROVISATION I AND II  
Theory as applied to performing, analyzing and composing in the jazz medium. Prerequisite, MUSIC 120 or permission of instructor. 213 prerequisite to 220.

311 (I), 312 (II). COMPOSITION  
Free composition in various forms and media. Individual lessons. Weekly seminar. Prerequisite, permission of instructor, MUSIC 114.

311 (I). JAZZ ARRANGING AND COMPOSITION  
Writing arrangements and composing for jazz ensembles and the school stage band. Analysis, listening, and instrumental scoring. Prerequisite, MUSIC 219, 220 or permission of instructor. 2 class hours, 1-2 hour laboratory period.

381, 386. SPECIAL PROBLEMS  
Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

391 SENIOR HONORS  
Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4

391 SENIOR HONORS  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## MUSIC EDUCATION

222, 229\* (I), (II). INSTRUMENTAL TECHNIQUES  
Classes in one instrument. Materials and meth-

ods of teaching. Open to music majors only. 3 class hours, 2 laboratory hours. Credit, 2.

|                      |                  |
|----------------------|------------------|
| 221 — Violin         | 226 — Horn       |
| 222 — Cello          | 227 — Trumpet    |
| 223 — Flute          | 228 — Trombone   |
| 224 — Oboe (Bassoon) | 229 — Percussion |
| 225 — Clarinet       |                  |

## 240.\* PRACTICUM IN MUSIC EDUCATION

Laboratory experience in performance, preparation, and conducting of scores, and analysis of rehearsal techniques for elementary and secondary school large ensembles. Open to non-majors with permission of instructor. Credit, 1-3.

## 241. INSTRUMENTAL MUSIC IN THE PUBLIC SCHOOLS

Philosophy, methods, and materials of instrumental music teaching in secondary education coupled with implications for elementary school instrumental music teaching. Open to majors in Music Education, or by permission of instructor.

## 242. MUSIC IN ELEMENTARY EDUCATION

Techniques and classroom strategies that develop a sensitivity to music. Examination of movement, children's literature, vocal media, and emerging trends in curriculum design. Open to majors in Music Education, or by permission of instructor.

## 243. CHORAL MUSIC IN SECONDARY EDUCATION

Problems of the changing voice, choral repertoire for junior and senior high school, rehearsal techniques, organization and structure of secondary school choral program. Open to majors in Music Education, or by permission of instructor.

## 244 (II). CLASSROOM MUSIC IN SECONDARY EDUCATION

Investigation, evaluation, and organization of materials for use in general music classes that contribute to the development of an aurally sensitive student in grades 7-12. Open to majors in Music Education or by permission of instructor.

245 (II). VOCAL PEDAGOGY  
Methods of teaching voice production. Supervised practice teaching of other class members. Open to majors in Vocal Music Education, or by permission of instructor. Credit, 2.

247. MARCHING BAND TECHNIQUES  
Organization, training, repertoire, and show preparation for the high school and college marching band. Prerequisite, two years of college marching band experience and concurrent enrollment in MUSIC 181. Credit, 2.

## 250 (II). INTERNSHIP IN THE TEACHING OF PUBLIC SCHOOL MUSIC

A semester-long supervised experience for students who wish to be certified to teach music in the public school. Open to majors in Music Education. Prerequisite, successful completion of required techniques, methods, and pedagogy courses. Credit, 6-12.

## 363 (II). BASIC CONDUCTING

Introduction to conducting. Prerequisite, MUSIC 114 and music major status. Credit, 2.

364 (I). INSTRUMENTAL CONDUCTING  
Rehearsal techniques and conducting of instrumental ensembles. Prerequisite, MUSIC 363. 2 class hours. Credit, 2.

## 365 (I). CHORAL CONDUCTING

Rehearsal techniques and conducting of vocal ensembles. Prerequisite, MUSIC 363. 2 class hours. Credit, 2.

\*May be repeated for credit.

## APPLIED MUSIC

Registration in Applied Music courses requires prior permission of the department. Music majors are not charged additional fees for applied lessons or practice rooms.

## 120 (I), (II). PIANO CLASS

Piano proficiency. Required of all music majors. Not open to non-majors. By examination or no more than 4 hours credit allowed. 1 class hour. Credit, 1.

## 121-138\* (I), (II). INDIVIDUAL INSTRUCTION

Development of performance skills; study of appropriate literature. Student recitals and studio classes provide opportunity for frequent performances. Jury examinations required. Registration in individual instruction requires: (a) prior permission of the department; (b) an audition with the applied faculty; (c) the availability of staff time; and (d) the availability of practice facilities. Applied instruction available to non-majors based on an audition and availability of time in instructors' schedules; ensemble performance may be required as a condition of applied instruction for non-majors. Credit, 1-4.

|           |               |
|-----------|---------------|
|           | Woodwinds     |
| 121 Piano | 128 Flute     |
| 122 Organ | 129 Oboe      |
| 123 Voice | 130 Clarinet  |
|           | 131 Bassoon   |
|           | 132 Saxophone |

|            |                   |
|------------|-------------------|
| Strings    | Brasses           |
| 124 Violin | 133 Trumpet       |
| 125 Viola  | 134 French Horn   |
| 126 Cello  | 135 Trombone      |
| 127 Bass   | 136 Baritone Horn |
|            | 137 Tuba          |
|            | 138 Percussion    |



161\* (I), (II). **UNIVERSITY CHORALE**  
Choir selected by audition. Preparation and performance of choral literature ranging from the Renaissance to Contemporary. Concerts on campus and on tour. Four rehearsals a week. Chamber Singers selected from this group. *Credit, 1.*

162\* (I), (II). **UNIVERSITY CHORUS**  
Open to all students. Preparation and concert performance of oratorios and other large choral works. Three rehearsals a week. *Credit, 1.*

165\* (I), (II). **WOMEN'S CHOIR**  
A select choir specializing in choir literature for women's voices. Audition required. *Credit, 1.*

167 (I), (II). **CHAMBER SINGERS**  
Vocal ensembles specializing in performance of chamber music from Renaissance to Contemporary. Audition required. *Credit, 1.*

168 (I), (II). **MADRIGAL SINGERS**  
Vocal ensemble specializing in music of the Renaissance. Audition required. *Credit, 1.*

171\* (I), (II). **UNIVERSITY ORCHESTRA**  
Preparation and performance of orchestral literature of various styles and periods. *Credit, 1.*

181\* (I). **MARCHING BAND**  
Preparation and performance of pre-game and half-time shows during football season. Prerequisite, attendance at pre-season band camp and permission of conductor. *Credit, 1.*

182\* (I), (II). **SYMPHONY BAND**  
Preparation and performance of band and wind ensemble literature of various styles and periods. *Credit, 1.*

183\* (I), (II). **CONCERT BAND**  
Preparation and limited performance of selected band literature. *Credit, 1.*

187 (I), (II). **SMALL ENSEMBLE**  
Preparation and performance of appropriate literature for small instrumental and vocal ensembles. Open to music majors, or by permission of instructor. *Credit, 1.*

187A Brass Choir  
187B New Music Ensemble  
187C String Bass Ensemble  
187D Chamber Jazz Ensemble  
187E Percussion Ensemble  
187F UMASS MARIMBAS  
187G Collegium Musicum

188 (I), (II). **JAZZ WORKSHOP**  
Preparation and performance of literature for jazz ensembles and the school stage band. Prerequisite, permission of instructor. *Credit, 1.*

\*May be repeated for credit.

## DANCE

140. **MODERN DANCE I**  
Introduction to modern dance technique. *Credit, 1.*

141. **MODERN DANCE II**  
Continuation of modern dance technique with more emphasis on locomotor combinations. Prerequisite, Modern Dance I and permission of instructor. *Credit, 1.*

142. **MODERN DANCE III**  
Intermediate dance techniques with emphasis on the performance of more advanced combinations and techniques. Prerequisite, Modern Dance II and permission of instructor. *Credit, 1.*

143. **MODERN DANCE IV**  
Advanced techniques in modern dance with emphasis on the performance of patterns and combinations. Prerequisite, Modern Dance III and permission of instructor. *Credit, 1.*

144. **MODERN DANCE V**  
A continuation of Modern Dance IV. Prerequisite, Modern Dance IV and permission of instructor. *Credit, 1.*

147. **BALLET I**  
Beginning ballet technique involving barre and center work. *Credit, 1.*

148. **BALLET II**  
A continuation of beginning ballet techniques at the barre and in the center. Prerequisite, Ballet I and permission of instructor. *Credit, 1.*

149. **BALLET III**  
Intermediate techniques at the barre and in the center. Prerequisite, Ballet II and permission of instructor. *Credit, 1.*

155. **JAZZ DANCE I**  
Introduction to jazz dance. The discipline taught is Part I of the Luigi Technique. Emphasis on the aspects of performance. Prerequisite, Ballet I and Modern Dance I. *Credit, 1.*

156. **JAZZ DANCE II**  
Primarily for Dance Concentration and Physical Education Majors. A continuation of Jazz I. Part II of Luigi Technique is taught as the student develops a competence in the jazz style. Prerequisite, Jazz I and permission of instructor. *Credit, 1.*

157. **JAZZ DANCE III**  
Primarily for Dance Concentration and Physical Education Majors. Application of the technique of the Luigi methods acquire in Jazz I and II. Prerequisites, Jazz II and permission of instructor. *Credit, 1.*

160. **UNIVERSITY DANCERS**  
Performances of the company throughout the

East. Concentrated tour during January. audition only. *Credit*

263. **ANALYSIS OF RHYTHM**  
Analysis of rhythmic structure of music and its application to motor activity. 2 class hours, 1 2-hour laboratory period. *Credit*

264. **DANCE IMPROVISATION**  
Exploration of movement potential by solving movement problems in space, time and form. Prerequisite, Modern Dance I and permission of instructor. *Credit*

265. **DANCE COMPOSITION**  
Choreography. 1 class hour, 1 2-hour laboratory period. *Credit*

350. **DANCE HISTORY**  
History of dance as a performing art in Western culture. *Credit*

353. **DANCE PRODUCTION**  
Dance production relating to both the artistic and technical direction of the performing arts. 2 class hours, 1 2-hour laboratory period. *Credit*

## Philosophy

Head of Department: Professor Robert Sleight  
Associate Head of the Department: Professor Terence Parson. Director of Undergraduate Studies: Professor Gareth Matthews. Professors Ackermann, Aune, Ehrlich, Gettier, Gendelberger, Oppenheim, Partee, Sligh, W. Associate Professors Brentlinger, Feldman, Ferguson, Foster, Robison; Assistant Professors Jubien, Sirridge.

The standard major in philosophy consists of 10 courses (30 credits), including one in logic, one in ethics, and four in the history of philosophy. 100-level courses may be counted toward this requirement, as may individual study courses, which can be arranged by students with special interests.

Two variations on the standard major are offered: (1) an Honors major, in which students take special seminars and write a senior honors thesis; and (2) a teacher preparation program, designed to enable students to meet secondary school certification requirements in which work in Education and opportunities for student teaching at local high schools are provided.

Three joint major programs, in which philosophy is combined with classics or linguistics or mathematics, are also available. They are administered by Philosophy in cooperation with the other departments concerned. For details, consult the Director of Undergraduate Studies, Professor Gareth Matthews.

105 (I), (II). **INTRODUCTION TO PHILOSOPHY (C)**  
Some of the most important general questions, ideas, theories, and methods of inquiry which have given direction to Western thought.



1 (I), (II). ETHICS (C)  
Classical and contemporary theories concern-  
ing policy formation and the justification of  
personal decisions and ways of life.

1 (I). PROBLEMS IN SOCIAL  
THOUGHT (C)  
A critical examination of a number of major  
problems in social policy and philosophy.

1 (II). MAN AND THE STATE (C)  
An exploration of the historical, moral, legal,  
and political relationships between the indi-  
vidual and the state.

1 (I), (II). INTRODUCTION TO LOGIC  
(E)  
The nature of critical thinking, including the  
functions of language, the structure of deduc-  
tive arguments, and a glimpse at inductive  
methods.

1 (I). HISTORY OF PHILOSOPHY —  
ANCIENT AND MEDIEVAL (C)  
Development of Western thought from its  
earliest beginnings to the flowerings of medi-  
eval scholasticism. Emphasis on the contribu-  
tion of important movements and great think-  
ers.

1 (II). HISTORY OF PHILOSOPHY —  
MODERN (C)  
Continuation of 161 from the Renaissance and  
the rise of modern science to 19th century  
idealism, positivism, and voluntarism.

20 PLATO AND ARISTOTLE (C)  
The major works of Plato and Aristotle in eth-  
ics, logic, and metaphysics; the systematic  
character of their thought and its contempo-  
rary relevance. Prerequisite, one semester  
course in philosophy.

20 MEDIEVAL PHILOSOPHY (C)  
The writings of major philosophers of the  
period, including Augustine, Aquinas, Duns  
Scotus, and Ockham; their historical setting  
and relevance to modern thought. Prerequi-  
site, one semester course in philosophy.

20 CONTINENTAL RATIONALISM (C)  
Representative philosophical texts, with con-  
centration on authors of major historical  
influence such as Descartes, Spinoza, Leibniz,  
and Pascal. Prerequisite, one semester course  
in philosophy.

20 BRITISH EMPIRICISM (C)  
Representative philosophical texts. Emphasis  
on Locke, Berkeley, Hume and their historical  
influence, especially on contemporary empiri-  
cism. Prerequisite, one semester course in  
philosophy.

20 KANT AND 19TH CENTURY  
PHILOSOPHY (C)  
Readings of original texts, with emphasis on

Kant and selected 19th century thinkers. Pre-  
requisite, one semester course in philosophy.

218. AMERICAN PHILOSOPHY (C)  
Examination by means of a study of selected  
original texts by the outstanding American  
philosophers, of their contribution to Western  
thought and American civilization.

225. INDIAN PHILOSOPHIES (C)  
Theories of reality, of knowledge, of art, and  
of human destiny in the leading schools of  
Indian Asia; traditional and contemporary  
political theory.

226. EAST ASIAN PHILOSOPHIES (C)  
Theories of human nature, society, and the  
state in philosophies of Chinese and Japanese  
origin; the modification of Buddhism under  
the influence of Chinese thought.

230. INTERMEDIATE LOGIC  
First order quantification theory with rela-  
tions, identity, and definite descriptions; an  
introduction to one or more of the following:  
modal logic, epistemic logic, deontic logic,  
tense logic, and many-valued logics. Prerequi-  
site, PHIL 125.

231. FORMAL FOUNDATIONS OF  
LINGUISTIC THEORY  
Topics in formal systems as they relate to  
modern linguistic theory, including set theory,  
logic, group theory, automata theory, and for-  
mal grammars. Prerequisite, LING 201.

240. PHILOSOPHICAL APPROACHES TO  
SCIENCE (E)  
An introduction to the results of philosophical  
analysis of scientific practice, and the bearing  
of these results on a general description of  
scientific methodology.

241. PHILOSOPHICAL APPROACHES TO  
RELIGION (C)  
Readings in contrasting religious philoso-  
phies, followed by analysis of concepts  
involved in understanding religion as related  
to other aspects of experience.

242. APPROACHES TO POLITICS AND  
SOCIETY  
The relationships between theories of person-  
ality, theories of social organization, and polit-  
ical philosophies, through a close study of  
classical and contemporary texts.

243. PHILOSOPHY OF ART (C)  
The nature and function of artistic creation  
and expression, the analysis of aesthetic  
experience, the distinctive function of art in  
culture and personality, and the principles of  
criticism.

261. CONTEMPORARY ANALYTIC  
PHILOSOPHY (C)  
Russell, Carnap, Wisdom, the later Wittgen-

stein, Austin, Strawson, Quine. Prerequisite,  
one semester course in philosophy.

263. MARXISM  
The moral, social, and political philosophy of  
Marx and Engels. Prerequisite, one semester  
course in philosophy or permission of instruc-  
tor.

264. EXISTENTIAL PHILOSOPHIES (C)  
Examination by a study of selected original  
texts of the main problems peculiar to this  
movement as a whole and to its main expo-  
nents individually. Prerequisite, one semester  
course in philosophy other than 125.

340. PHILOSOPHY OF SCIENCE  
A critical analysis of the structure of scientific  
method and the language of science, the  
respective roles of induction and deduction in  
science, and the status of theoretical terms.  
Prerequisites, three semester courses in phi-  
losophy, including 125.

341. PHILOSOPHY OF RELIGION  
Analytic study of the meaning and justifiabil-  
ity of beliefs concerning the existence and  
nature of God. Prerequisites, three semester  
courses in philosophy, including 125.

342. POLITICAL PHILOSOPHY  
A systematic approach to major controversies  
in philosophy of political science and political  
ethics; e.g., rationalism vs. empiricism, natural  
law vs. legal positivism. Prerequisite, one  
semester course in philosophy or permission  
of instructor.

343. AESTHETICS  
Analytic study of selected problems in aes-  
thetic theory. Prerequisites, three semester  
courses in philosophy, including 125.

344. EPISTEMOLOGY  
Examination of various accounts of the nature  
of knowledge; attention to basic principles of  
epistemic logic, probability, and certainty.  
Prerequisites, three semester courses in phi-  
losophy, including 125.

345. METAPHYSICS  
The basic problems of metaphysics. Problems  
include the nature of necessity, the relation  
between universals and particulars, the con-  
cept of causality, and the relative merits of  
competing metaphysical views, such as mate-  
rialism, idealism, and dualism. Prerequisites,  
three semester courses in philosophy, includ-  
ing 125.

346. PHILOSOPHY OF LANGUAGE  
An introduction to some of the major  
approaches to the philosophy of language; the  
contributions of some of the following philoso-  
phers: Frege, Carnap, Quine, Austin, Chom-  
sky, Russell, Strawson, Grice, Tarski, Witt-  
genstein, and others. Prerequisite, two courses  
in philosophy in addition to PHIL 230.

### 350. HISTORY OF ETHICS

Theories of important figures in the history of ethics, presented chronologically. Works in the following traditions will be represented: ancient Greek ethics; natural law and natural right theorists; the British moral sense, sympathy, and sentiment theorists; Kant; utilitarianism; self realization; pragmatism; and contemporary intuitionists. Prerequisites, two semester courses in philosophy above 200.

### 351. ETHICAL THEORY

Some major problems of ethical theory. Emphasis on definition, the status of ethical statements, and reasoning and justification in ethics. Prerequisites, two semester courses in philosophy, including 125.

### 365. PHILOSOPHICAL THEOLOGY

Systematic and historical inquiry into the methods, problems, and directions of theological thought. Prerequisites, two semester courses in philosophy above 200.

### 371. PHILOSOPHY AND LOGIC

Informal exposition of results of modern logic that are of philosophical significance. Topics chosen from: semantics for first-order theories; Lowenheim-Skolem theorem; Herbrand-Gentzen theorem; Gödel's incompleteness theorem for first-order elementary number theory; Church's undecidability theorem for quantification theory; Tarski's semantic conception of truth; paradoxes of abstract set theory. Prerequisite, PHIL 230.

### 372. MATHEMATICAL LOGIC I (E)

Axiomatization of sentential logic and the lower functional calculus; the syntax and semantics of first-order theories including results concerning consistency, adequacy, completeness, and elementary model theory. Prerequisite, PHIL 230 or major in mathematics.

### 373. MATHEMATICAL LOGIC II (E)

Formalization of elementary number theory as a first-order theory; Gödel's theorem concerning incompleteness of number theory; introduction to the theory of recursive functions. Prerequisite, PHIL 372 or major in mathematics.

### 374. PHILOSOPHY OF MATHEMATICS

A discussion of different philosophical positions on the foundations of mathematics (logicism, intuitionism, and formalism) and the existence of mathematical objects (platonism and nominalism). Prerequisite, MATH 381 or PHIL 373.

### 381. SELECTED ANCIENT OR MEDIEVAL PHILOSOPHER

Intensive study in the works of a single ancient or medieval philosopher, such as Plato, Aristotle, or Aquinas. Prerequisites, PHIL 125, 161 or 201, and one additional semester course in philosophy.

### 382. SELECTED MODERN

#### CONTINENTAL PHILOSOPHER

Intensive study in the works of a single modern continental philosopher, such as Descartes, Spinoza, Leibniz, Kant, or Hegel. Prerequisites, PHIL 125, 162 or 203, and one additional semester course in philosophy.

### 383. SELECTED MODERN BRITISH PHILOSOPHER

Intensive study in the works of a single modern British philosopher, such as Locke, Berkeley, Hume, or Mill. Prerequisites, PHIL 125, 162 or 204, and one additional semester course in philosophy.

(381, 382, and 383 may be repeated for an additional 3 credits provided the topic is different on each occasion.)

### 384. CONTEMPORARY PROBLEMS

Selected persistent philosophical problems — e.g., induction, relation of mind and body, perception, certainty of statements, knowledge of other minds. Prerequisites, PHIL 125 and two additional semester courses in philosophy.

### 385, 386. SPECIAL PROBLEMS

Individual study under the supervision of a member of the department. Written permission of the student's faculty supervisor must be filed with the departmental secretary before registration. Credit, 1-6.

### 391, 392. SEMINAR

One major philosopher, major philosophical tradition, or restricted subject in a special field of philosophical inquiry. Prerequisites, two semester courses in philosophy numbered above 200, or permission of department.

### 396, 397. HONORS SEMINARS, I, II

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Slavic Languages and Literatures

Head of Department: Professor Laszlo M. Tikos. Professors Ivask, Levin; Associate Professor R. Rothstein; Assistant Professors Lake, Stawiecki; Lecturer, H. Rothstein

The Russian major aims at proficiency in reading, writing, speaking and understanding the language, as well as a knowledge of Russian literature. Russian majors are encouraged to acquire a background in the history, government, economy and sociology of Russia, in

order to understand the culture and literature of the Russian people. Successful completion of the program should prepare the student for graduate study or enable him or her to become a teacher or translator of Russian.

Prerequisite for a major in Russian is successful completion of RUSS 110, 120, 140 or the equivalent.

Departmental requirements for a major are:

1. the third-year language sequence:  
261, 262 — Advanced Grammar  
271, 272 — Russian Conversation
2. the fourth-year language sequence:  
281, 282 — Russian Stylistics  
291, 292 — Introduction to Russian Literature
3. Two additional courses within department to be selected in consultation with an adviser.
4. HIST 214, 215 — The History of Russia

It is strongly recommended that students make every effort to initiate or continue study of another foreign language, preferably French or German. This is particularly important for anyone planning graduate study, but is important for others as well. Since students have a limited number of electives, it is essential for majors and prospective majors to consult early and often with their academic advisers in selecting their courses.

## RUSSIAN

110 (I), 120 (II). ELEMENTARY RUSSIAN. Grammar, exercises in composition and conversation, selected readings. No previous language training required. 3 class hours, 1 laboratory hour.

### 119, 129, 139. RUSSIAN READING COURSE

Intensive study of Russian grammar. Emphasis on developing reading ability only. No previous language training required.

130 (I), 140 (II). INTERMEDIATE RUSSIAN. Review of fundamentals of grammar followed by more advanced study of grammatical structure and idiom. Composition, conversation and readings in Russian fiction. Prerequisite, RUSS 120 or equivalent.

149 (II). RUSSIAN EXPOSITORY PROSE. Readings in non-literary Russian texts from a wide variety of scientific and technical fields. Emphasis on developing reading skill in student's field of specialization. Prerequisite, three semesters of Russian or equivalent.

201 (I). RUSSIAN CULTURE. Russian geographical, historical, literary, religious, philosophic and artistic life as a means to assess Russian cultural progress. Conducted in English.



2 (I). **DOSTOEVSKY (C)**  
Historical and literary background. Close text analysis. Student reports. Readings of selected works in the original required of Russian majors. Prerequisite, junior standing.

2 (II). **TOLSTOY (C)**  
Historical and literary background. Close text analysis. Student reports. Readings of selected works in the original required of Russian majors. Prerequisite, junior standing.

2 (I). **MASTERPIECES OF RUSSIAN LITERATURE IN TRANSLATION (C)**  
Section from classics of Russian romanticism and realism culminating in the novels of Dostoevsky and Tolstoy. Prerequisite, junior standing.

2 (II). **RUSSIAN DRAMA (C)**  
Russian drama in the originals from the beginnings to the establishment of a national repertoire and theatre. Plays from Fonvizin to Chekhov. Prerequisite, RUSS 262 or equivalent.

2 (II). **SOVIET LITERATURE (C)**  
Beginnings and development of Soviet prose, drama and criticism from Gorky to the present. Conducted in English. Majors required to do research in Russian. Prerequisite, junior standing.

2 (II). **RUSSIAN POETRY**  
Russian poetry in the originals. Nineteenth century to the present. Prerequisite, RUSS 262 or equivalent.

2 (I). **THE SLAVIC PEOPLES, THEIR LANGUAGES AND CIVILIZATIONS (C)**  
Survey of the historical, social, intellectual and cultural evolution of the Slavic peoples from the earliest times to the present. Emphasis on the non-Russian Slavs. Conducted in English.

2 (I), 262 (II). **ADVANCED RUSSIAN**  
Advanced grammar, building vocabulary and improving reading ability through selection from the Classical and Soviet Periods. Composition and classroom discussions in Russian using reading materials. Prerequisite, RUSS 140 or equivalent. Departmental requirement for Russian majors.

2 (II). **SCIENTIFIC RUSSIAN**  
Intensive experience in translating scientific, technical, academic and journalistic articles. Prerequisite, RUSS 140 or equivalent.

2 (II). **RUSSIAN PHONETICS**  
Detailed analysis of the Russian sound system. Articulation and intonation treated largely in comparison with the sound system of English. Recommended for those preparing to teach Russian. Prerequisite, RUSS 262 or equivalent.

271 (I), 272 (II). **RUSSIAN CONVERSATION**  
Devoted to acquiring a conversational vocabulary and to developing fluency in speaking Russian. Prerequisite, RUSS 140 or equivalent. Departmental requirement for Russian majors.

281 (I), 282 (II). **RUSSIAN STYLISTICS**  
The style of Russian literary works. Practical application of grammatical principles and intensive study of idiomatic expressions. Prerequisite, RUSS 262 or equivalent. Departmental requirement for Russian majors.

291 (I), 292 (II). **INTRODUCTION TO RUSSIAN LITERATURE**  
Survey course conducted in Russian. Readings in Russian, written reports. Prerequisite, RUSS 262 or equivalent. Departmental requirement for Russian majors.

310 (II). **THE TEACHING OF RUSSIAN**  
Analysis of the major linguistic problems facing the teacher of Russian and the methods used in solving them. Prerequisite, RUSS 365 or permission of instructor.

319 (I). **PUSHKIN**  
The most important works of Pushkin, prose and poetry: Eugene Onegin, Boris Godunov, The Captain's Daughter, The Bronze Horseman, Poltova, and others. Facility in speaking and writing Russian required. Conducted on a seminar basis; each student actively participating.

320 (II). **GOGOL**  
The most important works of Gogol: *The Inspector-General*, *Dead Souls*, *The Overcoat* and selected passages from his *Correspondence with Friends*, and other works. Facility in speaking and writing Russian required. Conducted on a seminar basis; each student actively participating.

331 (I). **19TH CENTURY RUSSIAN CRITICISM**  
Criticism of the 19th century: Belinsky, Chernyshevsky, Dobrolyubov, Pisarev and others. Facility in speaking and writing Russian required. Conducted on a seminar basis; each student actively participating.

365 (I). **STRUCTURE OF RUSSIAN**  
Descriptive analysis of the morphology of contemporary standard Russian with additional emphasis on selected problems of derivation. Prerequisite, proficiency in Russian.

366 (II). **CONTRASTIVE STRUCTURES OF RUSSIAN AND ENGLISH**  
Contrastive analysis of Russian and English. Emphasis on those elements of Russian structure that differ significantly from English. Prerequisite, RUSS 365.

385, 386. **SPECIAL PROBLEMS**  
Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

398. **SENIOR HONORS**  
Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

399. **SENIOR HONORS**  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## POLISH

110 (I), 120 (II). **ELEMENTARY POLISH**  
Oral and written exercises, pronunciation and grammar, reading of selected works. No previous language training required. 3 class hours, 1 laboratory hour.

130 (I), 140 (II). **INTERMEDIATE POLISH**  
Review of grammar, composition and selected readings. Prerequisite, POLISH 120 or equivalent and permission of instructor.

## Spanish and Portuguese

Chairman of Department: H. L. Boudreau. Professors Bancroft, De Puy, Greenfield, Piccus, Rothberg, Wexler; Associate Professors Barreda-Tomas, Fernandez-Turienzo, Scott, Sturm; Assistant Professors Andrade, Bradford, Galvin, MacLeod, Milan, Ornelas, Rauchwarger, Soons, Staczek, Zamora; Visiting Instructor Monserrate; Lecturer Collins.

## PORTUGUESE

Approval of major in Portuguese is now pending. Information is available in the Department.

110 (I), 120 (II). **ELEMENTARY PORTUGUESE**  
For students with no previous creditable training in Portuguese. Intensive practice in the language skills. 3 class hours, laboratory.

126 (I). **ELEMENTARY PORTUGUESE — INTENSIVE**  
Emphasis on the oral aspect. Designed to allow completion of PORT 110 and 120 in one semester. 10 class hours. Credit, 6.

130 (I), 140 (II). **INTERMEDIATE PORTUGUESE**  
For students with one year of college Portuguese or equivalent. Training in the language skills; emphasis on speaking and understanding; readings in cultural and literary texts.

146 (II). **INTERMEDIATE PORTUGUESE — INTENSIVE (C)**  
Emphasis on conversation in Portuguese and readings in Portuguese and Brazilian literature.



ture. Systematic review of grammar. Fulfills the language requirement. 8 class hours.

Credit, 6.

**161 (I), 162 (II). INTRODUCTION TO PORTUGUESE LITERATURE (C)**

Selected masterpieces of Portuguese literature presented integrally, in literary-historical perspective. Conducted in Portuguese. Either semester may be elected independently. Prerequisite, PORT 140 or permission of department.

**181 (I), 182 (II). CONVERSATIONAL PORTUGUESE**

Training in language skills with emphasis on speaking and understanding. Readings in newspapers, cultural texts, debates, discussions all geared to improving pronunciation, vocabulary and fluency in the language.

**345. TEACHING OF PORTUGUESE**

Review and analysis of problems, methods and materials in teaching Portuguese at the elementary, secondary and college levels.

**SPANISH**

The major in Spanish offers programs for students in any one of the three interest areas: Literature, Language, and Linguistics, and Bilingual Studies. Further information about provisional offerings not listed below is available from the department.

**110, 120 (I), (II). ELEMENTARY SPANISH**

For students with no previous creditable training in Spanish. Intensive practice in language skills. To fulfill the language requirement, upon completion of the course most students are required to continue by taking SPAN 130, 140. 3 class hours, 2 laboratory sessions.

**111. SPANISH FOR READING**

The development of reading skills in Spanish through the study of grammar and vocabulary. Not for students wishing to develop listening and speaking skills. Five class hours.

Credit, 4.

**126 (I), (II). ELEMENTARY SPANISH — INTENSIVE**

Emphasis on oral aspect. Designed to allow completion of SPAN 110 and 120 in one semester. 10 class hours. Open to all. Credit, 6.

**130, 140 (I), (II). INTERMEDIATE SPANISH**

For upperclassmen who have completed SPAN 110-120, and freshmen and transfer students found qualified by placement examination. Training in language skill, with emphasis on speaking and understanding; readings in cultural and literary texts. Students completing SPAN 140 fulfill the language requirement.

**134 (I), (II), 144 (I), (II). INTERMEDIATE SPANISH**

Social sciences reading track.

**145 (I). SPANISH FOR NATIVE SPEAKERS**

Review of Spanish grammar. Readings and composition. Open only to native speakers of Spanish.

**146 (I), (II). INTERMEDIATE SPANISH — INTENSIVE**

Emphasis on conversation in Spanish and readings in Hispanic literature. Systematic review of grammar. Successful completion of this course satisfies the foreign language qualification. 8 class hours. Credit, 6.

**150, 151 (I), (II). GRAMMAR**

A review of basic elements of grammar. For Spanish majors and others who plan to continue with Spanish beyond SPAN 140. To be taken concurrently with SPAN 130 and 140. 2 class hours. Credit, 2.

**155. SPANISH FOR NATIVE SPEAKERS**

Advanced grammar for native speakers. Readings, oral and written communication. Prerequisite: SPAN 145 or equivalent.

**161 (I), 162 (II). INTRODUCTION TO SPANISH LITERATURE (C)**

Selected complete works in several genres studied analytically and critically to develop intensive reading skills and extend ability to interpret and explicate in Spanish both orally and in writing. Prerequisite, SPAN 140 or equivalent.

**180, 181 (I), (II). ORAL SPANISH**

Pronunciation, vocabulary building, speeches, discussions, debates. Grammatical elements required for correct and fluent use of American and Peninsular Spanish. Prerequisite, SPAN 140 or permission of department. 4 class hours. Credit, 4 (180); 3 (181).

**191 (I). COMPOSITION**

The basic principles of writing in Spanish. Required of Spanish majors; open to others qualified. Prerequisites, SPAN 150 and 151.

**200 (I). CULTURAL BACKGROUNDS: SPAIN (C)**

The diverse factors that have shaped Spanish culture. In Spanish. Prerequisite, SPAN 140 or permission of instructor.

**201 (II). CULTURAL BACKGROUNDS: LATIN AMERICA (C)**

The unity and diversity of Latin American civilization and the different cultural factors that have shaped it. In Spanish. Prerequisite, SPAN 140 or equivalent.

**220. LITERARY CURRENTS OF THE HISPANIC WORLD I (C)**

The major literary currents in Spain and Spanish America from the medieval period through the baroque era. Prerequisite: SPAN 140.

**221. LITERARY CURRENTS OF HISPANIC WORLD II (C)**

The major literary currents in Spain and Spanish America from the eighteenth century through to the present. Prerequisite: SPAN or permission of instructor.

**222. TECHNIQUES OF LITERARY ANALYSIS IN HISPANIC LITERATURE**

Intended to train the Spanish major in techniques of literary analysis via the critical examination of three principal genres: poetry, drama, and prose fiction. Prerequisite: SP 220 or permission of instructor.

**250 (I, II). CONVERSATIONAL SPANISH (Course 1)**

For Spanish majors and others interested in developing fluency in the spoken language. Prerequisite, SPAN 180-181 or permission of department. Credit

**251 (II). CONVERSATIONAL SPANISH (Course 2)**

For Spanish majors and others interested in further fluency in the spoken language. Prerequisites, SPAN 180-181 and 250 or permission of department. Credit

**252 (I). CONVERSATIONAL SPANISH (Course 3)**

For Spanish majors and others interested.

**253 (II). CONVERSATIONAL SPANISH (Course 4)**

For Spanish majors and others interested in further fluency in the spoken language. Prerequisites, SPAN 180-181, 250, 251, and 252 or permission of department. 2 class hours. Credit

**260 (II). SPANISH MASTERPIECES IN TRANSLATION (C)**

Detailed study of masterpieces of Spanish literature from various periods. Not open to Spanish majors nor to students who have taken or plan to take SPAN 161-162.

**261. LATIN-AMERICAN LITERATURE IN TRANSLATION**

The literature of Latin America from Colonial Period to the present. Works read in English translation. Not open to Spanish majors.

**262. SPANISH GOLDEN AGE DRAMA IN TRANSLATION (C)**

The drama of the Golden Age of Spanish literature (1500-1700) with emphasis on works of Lope de Vega, Tirso de Molina, and Calderón de la Barca. Readings in English translation. Not open to Spanish majors.

**292. LATIN-AMERICAN LITERATURE IN TRANSLATION (C)**

The literature of Latin America from Colonial Period to the present. Works read

lish translation. Not open to Spanish majors.

**SECONDARY STUDENT TEACHING**  
Preparation of students to meet the requirements for secondary teacher certification in Spanish. No credit from this course may be applied to the major program. Registration in this course must be completed one full semester prior to the semester in which the course is taken. Prerequisites: SPAN 375, PSYCH 263 or EDUC 301 and a Foundations of Education course or its approved alternative.

Credit, 8-12.

**331. 302 (II). FIELD STUDY**  
Field experiences (such as tutoring Spanish-speaking students, study and work in a Puerto Rican community, or field study in Puerto Rico). Before registering, students must consult the department as to time requirements. May be taken either semester or both, but only one semester may be used for major credit in Spanish. Prerequisite: permission of instructor. Credit, 1-3.

**332. ADVANCED GRAMMAR**  
For details and shades of Spanish grammar. Highly recommended for Spanish majors planning to teach; open to all qualified. Prerequisites, SPAN 150 and 151.

**333. ADVANCED COMPOSITION**  
Intensive study of composition and style. Highly recommended for Spanish majors planning to teach; open to all qualified.

**334. SPANISH LITERATURE FROM ITS BEGINNINGS TO 1500 (C)**  
Canto de mio Cid, Libro de buen amor, Celestina and other selected texts.

**335. SPANISH MEDIEVAL POETRY (C)**  
Spanish epic, lyric poetry and other verse of the period.

**336. SPANISH MEDIEVAL PROSE (C)**  
Narrative, historical and didactic prose works of medieval Spain.

**337. OLD SPANISH TEXTS AND READINGS (C)**  
Language and writing systems of Medieval Spain through an analysis of selected texts and readings. Prerequisite: SPAN 162 or equivalent.

**338. INTRODUCTION TO THE LITERATURE OF THE GOLDEN AGE (C)**  
An overview of the prose, poetry, and drama characterizing the literature of Renaissance and Baroque Spain excluding *Don Quijote*. Prerequisite: SPAN 162 or equivalent.

**339. PROSE OF THE GOLDEN AGE (C)**  
Major prose works in 16th and 17th century

Spain. Emphasis on the novel, excluding the *Quijote*.

**332. LYRIC POETRY OF THE GOLDEN AGE (C)**  
Spanish poetry of the 16th and 17th centuries from Garcilaso to Gongora.

**333. DRAMA OF THE GOLDEN AGE (C)**  
Deals primarily with the comedia during the period of maximum creation, 1556-1681.

**334. CERVANTES (C)**  
Intensive reading of *Don Quijote*.

**340. SPANISH LITERATURE FROM 1700 THROUGH ROMANTICISM (C)**  
Spanish literature and thought in the 18th century and the Romantic movement.

**341. 19TH CENTURY SPANISH NOVEL (C)**  
Prose fiction in the second half of the 19th century.

**345. MODERN SPANISH THEATRE (C)**  
Development of the theatre in Spain from the post-Romantic period to the present.

**346. 20TH CENTURY SPANISH PROSE FICTION (C)**  
The novel in Spain from the Generation of '98 to the present.

**347. MODERN SPANISH POETRY (C)**  
Poetry in Spain from Becquer to the present.

**348. THE ESSAY IN MODERN SPAIN (C)**

**350. SPANISH-AMERICAN LITERATURE TO 1900 (C)**  
A survey from pre-Columbian times to the Modernist movement.

**351. THE MODERNISTA MOVEMENT (C)**  
Modernismo in Spanish America, including a comparative study of its manifestations in Spain.

**352. MAJOR SPANISH-AMERICAN WRITERS (C)**  
Intensive study of major figures in Spanish-American literature.

**353. SPANISH AMERICAN POETRY SINCE MODERNISMO (C)**  
The principal authors and movements in 20th century poetry. Prerequisite: SPAN 162 or equivalent.

**354. RECENT AND CONTEMPORARY SPANISH AMERICAN DRAMA (C)**  
The principal authors and movements of 20th century drama. Prerequisite: SPAN 162 or equivalent.

**355. MODERN SPANISH-AMERICAN PROSE FICTION (C)**  
Spanish-American prose fiction in the late 19th and early 20th centuries.

**356. CONTEMPORARY PROSE FICTION IN SPANISH AMERICA (C)**  
The recent novel and short story.

**357. HISPANIC LITERATURE OF THE CARIBBEAN (C)**  
A comparative study of the development of the literature of Puerto Rico, Cuba and the Dominican Republic, and of the historical, cultural and socio-political factors that have shaped it. Prerequisite, SPAN 161-162.

**370. GENERAL VIEW OF HISPANIC LINGUISTICS**  
An introduction to linguistics as applied to the study of the Spanish language. An overview of the areas (diachronic, synchronic, dialectal) of study, and of the different theoretical points of view. Prerequisite: proficiency in Spanish.

**371. HISTORY OF THE SPANISH LANGUAGE IN SPAIN AND AMERICA**  
The Spanish language from the Middle Ages to the present, in both Spain and America.

**372. HISPANIC DIALECTOLOGY**  
A diachronic and synchronic survey of the dialects of Spanish America and the Hispanic Caribbean Spanish. Three major areas of study: the dialects of Spain, the dialects of Spanish America, and the dialects of the Hispanic Caribbean. The area emphasized varies from year to year. Prerequisite: SPAN 111.

**373. CONTRASTIVE ANALYSIS OF SPANISH AND ENGLISH**  
A contrastive analysis of the phonological, morphological and syntactic systems of Spanish and American English. Prerequisite: SPAN 370.

**374. HISTORY AND THEORY OF HISPANIC BILINGUALISM**  
A survey of the history of contact between different linguistic and cultural groups, and of the theories of the nature and consequences of these contacts. Emphasis on the Hispanic world and Spanish- and Portuguese-speaking groups in the U.S. Prerequisite: SPAN 370.

**375. THE TEACHING OF SPANISH**  
Analysis of the major problems anticipated in the teaching of Spanish, and their solutions.

**376. TEACHING OF ENGLISH TO SPANISH SPEAKERS**  
The application of linguistic principles to the teaching of English for Spanish speakers. Prerequisite: SPAN 370.



378 (I). SPANISH PHONETICS:

PHONOLOGY AND PHONEMICS

A systematic study of sounds, articulation and graphic representation. Highly recommended for teachers of Spanish.

379. THE STRUCTURE OF MODERN SPANISH

Syntax and morphology of contemporary Spanish. Both the oral and written systems analyzed from the points of view of the major modern grammatical theories. Structural differences between Spanish and English; problems of interference for the non-native. Prerequisite, permission of instructor.

385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

391. SENIOR SEMINAR

Independent work on special problems in Hispanic literatures.

398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Theater

Chairman of Department: Professor David M. Knauf. Professor Niedeck; Associate Professors Abramson, Korty, Stewart; Assistant Professors Bednerik, Brann, di Salvo, Farris, Fiala, Gaeke, Galbreath, Mahnken; Lecturer Rocky.

The course of study in the Department of Theater is grounded in the belief that the performing arts draw on a unique combination of a variety of intellectual and artistic skills and talents which are most fully developed when theory and practice are integrated in the learning experience. Students in the program gain expertise in all the fundamental areas of theatrical art in graduated sequences of study designed to bring into focus rigorous critical thinking, precise methods of research, and imaginative expression in performance.

### Sequence of Study

#### Introduction to Theater

Prerequisites: none 3 cr

#### Theater Practice

Prerequisites: none 1 cr

(May be repeated; 3 credits are required of majors)

#### Basic Techniques

Prerequisites: Introduction to Theater and at least 1 credit of Theater Practices

Scenography 3 cr

Dramaturgy 3 cr

Performance 3 cr

#### Intermediate Techniques

Prerequisite: completion of all basic techniques

Scenography 9 cr

Dramaturgy 9 cr

Performance 9 cr

In addition, students may elect up to 18 credits of advanced course work in scenography, dramaturgy, and/or performance when intermediate-level work has been completed in the corresponding area(s).

Freshmen who think they may wish to major in theater should elect Introduction to Theater, which also satisfies one of the four course requirements in the Humanities and Fine Arts core (C).

Basic techniques in scenography, dramaturgy, and performance are normally completed during the sophomore year. Opportunities to test out of basic techniques are provided regularly by the Department of Theater. The bulk of the 56 credits required by the College of Arts and Sciences should be earned before the beginning of the junior year. Intermediate and advanced course work is usually completed during the junior and senior years.

Non-majors with appropriate qualifications are welcome to participate in the activities of the Department of Theater. Introduction to Theater is strongly recommended before course work at the basic and intermediate levels. Enrollment of non-majors in all upper-level courses is permitted after completing (or testing out of) basic techniques in the specific area(s) of interest. Department majors are given preference in placement at all levels within the program.

With the exception of Introduction to Theater and Theater Practice, enrollment in theater courses is by permission of designated department advisers only. It is imperative, therefore, that all majors, prospective majors, and non-majors consult with a department adviser to determine eligibility for and appropriate placement within the various curricular activities.

### 100. INTRODUCTION TO THEATER (C)

An introduction to the art of the theater, form, function, influences, and place in society.

### 110. THEATER PRACTICES

Practical experience on box office, house, publicity, shop, and production crews; may be repeated for credit; mandatory Pass/Fail. Credit, 1.

### 120. DRAMATURGY (C)

An introduction to the esthetic principles and the methods of historical and critical research employed in the analysis of plays and stage performances.

### 140. PERFORMANCE

An introduction to the art of acting; exercise in creating the physical and vocal detail stage characterization with special attention to the techniques of establishing and controlling theatrical information. Prerequisite: THEATR 100; at least one semester of permission of department.

### 160. SCENOGRAPHY

An introduction to the art of theatrical design with emphasis on the function of scenic properties, lights, costumes, make-up, sound in creating the visual environment stage performances. Prerequisites: THEATR 100; at least one semester of 110; permission of the department.

### 210. REHEARSAL AND PRODUCTION

Individual production assignments as actor, crew heads, and assistant directors, dramaturgy, voice and movement coaches; mandatory Pass/Fail; may be repeated for credit. Credits, 1.

### 211. THEATRICAL MAKE-UP

Principles and practices of stage cosmetics and prostheses. Prerequisites: THEATR 221, or 222; 240, 241, or 242; 260, 261, or 262; permission of instructor.

### 215. THEATER MANAGEMENT

The management and organization of theaters, their public promotion, and their impact on the social, political, and economic life of the community. Prerequisites: THEATR 140, 160 and permission of instructor.

### 220. CONVENTIONS OF THE CLASSICAL THEATER (C)

Experiments in theatrical art in ancient Greece and Rome, renaissance Italy, and century France. Prerequisites: THEATR 140, at least two semesters of 110; 120, 140, and permission of the department.

### 221. CONVENTIONS OF THE MODERN THEATER (C)

Innovations in theatrical practice from late 16th century in England and Scotland through the romantic revolution in Germany and France; medieval stage artists are examined as precursors of the modern theater. Prerequisites: THEATR 100; at least two semesters of 110; 120, 140, and 160; permission of department.

### 222. CONVENTIONS OF THE AVANT-GARDE THEATER (C)

New trends in theatrical practice from middle of the 19th century to the present. Prerequisites: THEATR 100; at least two semesters of 110; 120, 140, and 160; permission of department.

### 230. AMERICAN THEATER (C)

Selected periods and styles in the history of American theater.



American stage and screen art. Prerequisites: THEATR 220, 221, 222; or permission of instructor.

## 2. BLACK THEATER (C)

Selected works by White and Black playwrights with emphasis on the image of the Afro-American. Prerequisites: THEATR 220, 221, 222; or permission of instructor.

## 2. CONCERT THEATER

Analysis of non-dramatic literature (prose, verse, non-fiction) for group performance; preparation and rehearsal of chamber theater and readers theater scripts. Prerequisites: THEATR 220, 221, or 222; 240, 242; or permission of instructor.

## 2. STAGE Diction

Development of the actor's vocal resources with attention to clarity, articulation, flexibility, range, variety, energy, and projection; the rhythms and patterns of dialogue, and the coding of the dramatic line; phonetics and ear training; the elements of stage dialect. Prerequisites: THEATR 100; at least two semesters of 110, 120, 140, and 160; permission of the department.

## 2. STAGE MOVEMENT

Exercises in physical balance, alignment, coordination, and control with special attention to the part which posture, position, and movement play in conveying theatrical information. Prerequisites: THEATR 100; at least two semesters of 110, 120, 140, and 160; permission of department.

## 2. ACTING

Script analysis, and the development of vocal and physical performance in the building of effective stage characterizations. Prerequisites: THEATR 100; at least two semesters of 110, 120, 140, and 160; permission of department.

## 2. SCENIC DESIGN

The principles of scenic design and technical production and their application. Prerequisites: THEATR 100; at least two semesters of 110, 120, 140, and 160; permission of department.

## 2. LIGHTING DESIGN

The theories, practices, and equipment of stage lighting. Prerequisites: THEATR 100; at least two semesters of 110, 120, 140, and 160; permission of department.

## 2. COSTUME DESIGN

Principles and practices of silhouette, draping, color, texture, pattern drafting, and construction of theatrical garments. Prerequisites: THEATR 100; at least two semesters of 110, 120, 140, and 160; permission of department.

## 35. PLAYWRITING

An introduction to the technique of translating

idea into a theatrical scenario. Prerequisites: Completion of departmental major; permission of instructor.

## 339. PROJECTS IN DRAMATURGY

Selected problems in the history of western stage. Prerequisites: Completion of departmental major; permission of instructor.

## 340. SPEECH STYLES AND DIALECTS

Intensive vocal exercises in one or two theatrical periods or styles depending on the performance needs of a given semester as well as in American regional and national dialects. Prerequisites: THEATR 240, 241, 242, and permission of instructor.

## 341. STYLES OF STAGE MOVEMENT

Intensive exercises in stage movement with period costumes and properties, period and show dance; the use of stage weapons; pantomime, lazzi. Prerequisites: THEATR 240, 241, 242, and permission of instructor.

## 342. ACTING STUDY

Intensive exercises in script analysis, characterization, and ensemble performance. Prerequisites: THEATR 240, 241, 242, and permission of instructor.

## \*345. DIRECTING

An introduction to the theory and practice of stage direction with special attention to the control of stage space for conveying theatrical information. Prerequisites: Completion of departmental major; permission of instructor; assistant to a faculty director.

## \*348. CONCERT THEATER ENSEMBLE

Analysis, rehearsal, and performance of a repertory of concert theater scripts for on- and off-campus production. Prerequisites: Completion of departmental major or permission of instructor.

## \*349. SENIOR ENSEMBLE

Intensive analysis and rehearsal of a script from the initial production concept to the finished performance. Prerequisites: Completion of departmental major and permission of instructor.

## \*359. PROJECTS IN PERFORMANCE

Selected problems in voice, movement, and acting. Prerequisites: Completion of departmental major, and permission of instructor.

## \*360. SCENIC DESIGN STUDIO

Tutorial studies in scenic design theory and conceptualization, and the solution of related technical problems; may be repeated. Prerequisites: THEATR 260, 261, 262, and permission of instructor.

## \*361. LIGHTING DESIGN STUDIO

Tutorial studies in lighting design theory and conceptualization, and the solution of related

technical problems. Prerequisites: THEATR 260, 261, 262, and permission of instructor.

## \*362. COSTUME DESIGN STUDIO

Tutorial studies in costume design theory and conceptualization, and the solution of related technical problems. Prerequisites: THEATR 260, 261, 262, and permission of instructor.

## \*379. PROJECTS IN SCENOGRAPHY

Selected problems in stage design and technical theater. Prerequisites: completion of major, and permission of instructor.

## \*385, 386. SPECIAL PROBLEMS

Directed study in areas not covered in the theater curriculum; by approved contract only. *Credit, 1-6.*

## 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. *Credit, 4*

## 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. *Credit, 1-5.*

\*May be repeated for credit.

# Natural Sciences and Mathematics

## Biochemistry

Head of Department: Professor R.C. Fuller; Professors Little, Westhead; Associate Professors Gawienowski, Nordin, Robinson; Zimmermann; Assistant Professors Fischer, Fournier, Mason, Schneider, Schwartz, Slakey.

The sample curriculum is outlined below. First Year: MATH 127-128 or 131-132; CHEM 113-114 or 111-112; ZOOL 190 or (not both) BOTANY 100 (if exempt, select from ZOOL 221 or 227 or 240 or from an approved advanced BOTANY course); LANGUAGE (if exempt, a C or D Core); RHET (if exempt, a C or D Core).

Second Year: MATH 255 (I); ZOOL, BOTANY or MICBIO; CHEM 165, 166, 167, 168, or 261, 262, 263, 264; LANGUAGE or C or D Core; PHYSICS 141-142 (II). Third Year: CHEM 210 or 127; CHEM 281-282; BIOCHM 223-224-226 (advanced section) C or D Core; Electives (may include BIOCHM 385).

Fourth Year: Advanced BIOCHM or Advanced Life Science or Advanced CHEM; BIOCHM 388; BIOCHM 385-386 or 398-399; COINS 122 or 101; Elective (or Core requirements).

### 120 (II). INTRODUCTION TO BIOCHEMISTRY (E)

A brief introduction to biochemistry as a terminal course for students whose professional objectives do not necessitate more extensive training in Chemistry. Prerequisite, Chem 112 or 110. 3 class hours, 1 3-hour laboratory period. Credit, 4.

### 220 (I), (II). ELEMENTARY BIOCHEMISTRY (E)

The more important facts relating to the chemistry of biological materials and processes. Two lecture sections, predominantly the same: One with a more chemical background for prospective engineers, chemists and people more involved in the analytical approach to biochemistry; the second more biologically oriented. Prerequisite, CHEM 160 or 261.

### 221 (I), (II). ELEMENTARY BIOCHEMISTRY LABORATORY (E)

The laboratory for BIOCHM 220. Credit, 1.

### 223 (I), 224 (II). GENERAL BIOCHEMISTRY (E)

A broad introduction, primarily for majors. Some students in closely related sciences, i.e., chemistry, microbiology, etc. may register with permission of instructor. Prerequisite, CHEM 166 or 262. Required of all biochemistry majors.

### 225 (I), 226 (II). BIOCHEMISTRY LABORATORY

Introduction to laboratory work with biochemical materials and standard techniques. BIOCHM 226 primarily for biochemistry

majors. Prerequisite, CHEM 127 or equivalent. Credit, 1-2.

### 385 (I), 386 (II). SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. For biochemistry majors only. Credit, 1-6.

### 388 (I). SENIOR SEMINAR

Topics of current biochemical interest.

Credit, 1-3.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office.

Credit, 4.

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Botany

Acting Head of Department: Edward L. Davis. Professors Bierhorst, H. Bigelow, Davis, Livingston, Lockhart, Schuster, Shapiro, Smith, Swanson, Tippo; Associate Professors M. Bigelow, Klekowski, Mulcahy, Stein, Stern, Wilce; Assistant Professors Barrett, Godfrey, Raudzens, Rubinstein, Thompson, Walker, Webster, Herbarium Curator Ahles.

Programs in Botany permit a broad liberal education and prepare students for teaching and/or research in high schools, colleges, universities, industry and experiment stations. Departmental requirements for majors preparing for graduate training in Botany (rather than for secondary school teaching) include the following:

CHEM: 261-262, or CHEM 160 and at least one of the following: BIOCHM 220, or BOTANY 212.

MATH: 127-128 (Calculus), or two of the following: MATH 112 (Finite Math), STATIS 231 (Intro. to Fund. of Stat.), or COINS 122 (Intro. to Problem Solving).

PHYSIC: 141-142 or 121-122.

ZOOL: 240 (BOTANY 240).

Foreign language: Knowledge of a foreign language is strongly recommended, and German, Russian, French or Spanish, in that order are preferred.

BOTANY: 100 or 101, plus 24 credits in Botany, including at least two courses from each of the following 3 areas:

1. Ecology-Evolution - 219, 221, 222, 226, 228 or the offerings in Coastal, Tundra or Community Ecology.

II. Physiology-Cytology-Genetics - 212, 215, 255, 261, 270 or 311.

III. Anatomy-Morphology-Systematics 231, 241, 251, 280, 281, 291, 303 or 304.

Students planning to teach in second schools with a concentration in Bot must take the following courses:

CHEM: 111-112, plus one other course Chemistry or Biochemistry.

MATH: 127-128, or two of the following: MATH 112 (Finite Math), STATIS (Intro. to Fund. of Stat.), or COINS (Intro. to Problem Solving).

PHYSIC: 141-142 or 121-122

ZOOL: 135 and 240 (BOTANY 240)

BOTANY: 100 or 101 plus 125, Plant Kingdom and 228, Prin. of Evolution, plus a minimum of 15 credits in Botany including at least one course from each of the following areas: Ecology-Evolution, II. Physiology-Cytology-Genetics, III. Anatomy-Morphology-Systematics. (Courses for areas III above.)

Additional requirements for certification must be completed in Psychology and Education. The requirements in Psychology are: Elementary, and either 263, Adolescent 301, Educational. These should be completed by the end of the sophomore year. The requirements in Education vary with the program. The pre-practicum course "Field Schools and the School of Education", should be taken in the freshman year if possible. Details about admission to the certification program and specific Education requirements may be obtained from your departmental adviser or from John M. Adams in CASB-Machmer Hall.

100 (I), (II). INTRODUCTORY BOTANY. Structure, function and reproduction of plants, dealing primarily with the flowering plants. Basic biological principles emphasized. Not to be taken serially with BOTANY 101. 3 class hours, 1 3-hour laboratory period. Credit, 1.

### 101 (I), (II). GENERAL BOTANY (E)

An introduction to basic biological principles of organization, development and evolution using botanical illustrations. The foundation and approach in biological research, and consequence of this research on human thought and experience. Not open to science majors without permission of major department. Not to be taken serially with BOTANY 100. 2 class hours, 1 demonstration-discussion hour.

121. PLANTS AND ENVIRONMENT (E) The interrelationships between plants and



environment, emphasizing the impact of man's influence and control on the economy of natural biological areas. Designed for non-science majors. 2 class hours, 1 3-hour laboratory period. Not open to science majors without permission of major department.

#### 1. THE PLANT KINGDOM (E)

General survey of the morphology, reproduction, distribution, and importance of the various molds, bacteria, algae, fungi, lichens, liverworts, mosses, ferns and seed plants. Prerequisite, BOTANY 100 or 101. 2 class hours, 1 2-hour laboratory period.

#### 2. (I), (II). NEW ENGLAND FLORA (E)

Identification of local flora (vascular) with emphasis on terminology of fruits, leaves, flowers, etc. Prerequisite, BOTANY 100 or 101. 2- and 3-hour laboratory periods with lecture combined. Several field trips.

#### 1. (I), (II). GENETICS AND EVOLUTION (E)

Survey of the cell and those fundamental genetic principles which are the basis of evolution. Origin and history of organic evolution. Mechanisms of evolution. Intended for non-science majors.

#### 2. (II). INTRODUCTORY PLANT PHYSIOLOGY

Differentiation, growth, nutrition, and the communication between plant and environment used to illustrate the means by which plants function. Prerequisites, BOTANY 100 or 101, and at least one semester of Organic Chemistry. 3 class hours, 1 3-hour laboratory period. Credit, 4.

#### 2. (I), (II). PLANT METABOLISM

The chemical operation of plants, emphasizing the enzymatic processes involved in the synthesis and breakdown of the more important chemical constituents of plants. Prerequisites, BOTANY 211, CHEM 160 or equivalent. 3 class hours, 1 3-hour laboratory period. Credit, 4.

#### 2. PLANT GROWTH

The physiology, kinetics and energetics of plant growth. The growth of plant cells, whole plants, assemblages of plants, and plant productivity. Prerequisites, BOTANY 211, one year of introductory chemistry, and one year of introductory physics. Courses in differential calculus, statistics, and/or biochemistry are recommended.

#### 2. ECOLOGICAL PLANT PHYSIOLOGY

Physiology of plants in relation to the classes of problems they face and the various strategies evolved for survival and growth. Prerequisite, BOTANY 211, one semester of differential calculus.

#### 221 (I). PLANT ECOLOGY

Interrelationships between plants and their environment, with emphasis on the structure and development of plant communities. Prerequisite, BOTANY 100 or BOTANY 101; BOTANY 126 and 211 recommended. 2 3-hour class-laboratory periods.

#### 222. AUTECOLOGY

Plant behavior in relation to the physical and biological environment, with emphasis on the ecology of individual plants. Prerequisites, BOTANY 211 and 221.

#### 224. COASTAL PLANT ECOLOGY

The botany and ecosystem processes along the U.S. East Coast. Emphasis on salt marshes, maritime forests and grasslands, dune strand, and the impact of modern man. Prerequisites, BOTANY 100, 221.

#### 226. PLANT GEOGRAPHY

Principles governing the development and natural distribution of plants and plant communities. Consideration of the vegetation of North America. Prerequisite, BOTANY 221; BOTANY 281 recommended.

#### 228. PRINCIPLES OF EVOLUTION

Ecological phenomena through the application of genetic concepts. The adaptation of individuals, populations, and communities as functional units. Prerequisite, Introductory Genetics or permission of instructor.

#### 231 (II). MYCOLOGY

Fungi, their life history and distribution, their significance in disease, their utilization by man. Prerequisite, BOTANY 125 or permission of instructor. 2 class hours, 1 3-hour laboratory period. Credit, 4.

#### 240 (I), (II). PRINCIPLES OF GENETICS

Mechanisms of heredity in plants and animals, emphasizing transmission and action of genes, population genetics, and evolution. Prerequisites, BOTANY 100 or ZOOL 101, CHEM 112 or 114. See ZOOL 240.

#### 241 (I). PHYCOLOGY

The phylogeny, taxonomy, morphology and ecology of the major group of the marine and fresh-water algae. Field work. 2 class hours, 2 2-hour laboratory periods.

#### 251 (II). THE ARCHEGONIATES

The morphology, evolution and systematics of bryophytes, ferns and their allies. 2 class hours, 1 3-hour laboratory period.

#### 255. EXPERIMENTAL PTERIDOLOGY

Physiological and genetical parameters of the pteridophyte life cycle, integrated to give an overall biological view. The research potential of these organisms will be stressed. Prerequisites, BOTANY 240 or ZOOL 240, and BOTANY 211.

#### 261 (I). BIOLOGY OF LOWER PLANTS

The use of fungi and algae as experimental organisms for investigations in physiology and genetics. Prerequisite, BOTANY 211, ZOOL 360, or CHEM 224. 2 class hours, 2 3-hour laboratories. Credit, 4.

#### 270 (II). CYTOGENETICS

Correlation of genetic data with the behavior of chromosomes, including an analysis of the mechanism of crossing over. Consideration of the evolution of chromosomal systems, including the following: genetic control of meiotic behavior, karyotype modifications, structural changes, sex-determining mechanisms, polyploidy, deviant meiotic behaviors, and primate systems. Prerequisites, BOTANY 311 and either BOTANY 240 or ZOOL 240.

#### 271 (I). THE NATURAL HISTORY OF MAN (E)

Man's changing view of himself and the universe as new scientific discoveries are made; deals with the questions: Who is man? What is his nature and origin? Where is he going? What is his future?

#### 280. ORIGIN, EVOLUTION, AND DISTRIBUTION OF FLOWERING PLANTS

Survey of evolutionary history of primitive flowering plants and the significance of their geographic distribution. Prerequisite, BOTANY 125 or equivalent. Recommended, BOTANY 281, 291. 3 class hours, 1 2-hour seminar/discussion. Credit, 4.

#### 281 (II). INTRODUCTORY ANGIOSPERM SYSTEMATICS

The evolution and systematics of flowering plants emphasizing families and their relationships. Prerequisite, BOTANY 100 or 101. 3 class hours, 1 3-hour laboratory period. Credit, 4.

#### 291. PLANT ANATOMY

Introduction to plant histology, organography and development; emphasis on flowering plants. Presented at a level for students majoring in theoretical and applied plant sciences. Prerequisite, BOTANY 100 or equivalent. 2 class hours, 3 2-hour laboratory periods. Credit, 4.

#### 301 (I). MORPHOGENESIS

The development of plant form and structure at the level of cells and organs. Illustrations drawn from controlled experiments on the contribution of internal and external factors. 3 class hours, 1 2-hour laboratory-discussion period. Credit, 4.

#### 303, 304. PLANT MORPHOLOGY

The life cycles of various plant taxa, the dynamics of their evolution and the interpretation of various morphological structures. Prerequisite, BOTANY 100 or permission of



instructor. 2 class hours, 2 2-hour laboratory periods. Credit, 4.

### 311 (I). CYTOLOGY

Introduction to microscopy; nuclear duplication and division; nuclear function cell development; structure, function and development of cellular membrane systems, with special reference to chloroplasts and mitochondria, 2 class hours, 1 2-hour laboratory period.

### 335 (I). AQUATIC VASCULAR PLANTS

Systematics, ecology and fundamental importance of aquatic plants. Designed for majors in Wildlife. Prerequisites, BOTANY 100, 126. 2 3-hour class-laboratory periods. Credit, 1-3.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Chemistry

Head of Department: Professor William E. McEwen. Professors Archer, Brandts, Cade, Cannon, Carpino, Chien, Holmes, Lillya, MacKnight, Miller, Ragle, Rausch, Richason (Associate Head), Roberts, Siggia, Smith, Stein, Stengle, Wood; Associate Professors R. Barnes, Chandler, Curran, George, Hixson, McWhorter, Rowell, Stidham, Uden, Zajicek; Assistant Professors Oberlander, Rhodes, Williams, Wynne; Instructors Bernasconi, Reed, Turner; Lecturer D. Barnes.

Information on the chemistry curriculum is provided in the College of Arts and Sciences section where departmental programs are described, or may be obtained from Professor George Richason, the departmental Chief Advisor.

### 101 (I), 102 (II). GENERAL CHEMISTRY FOR NON-SCIENCE MAJORS (E)

Fundamental chemical laws and theories. Discussion of such topics as "Our Environment", "Energy Sources", "The Chemistry of Life", etc. CHEM 102 is a continuation of CHEM 101, but is not required for credit in 101. The sequence does not satisfy the prerequisites for advanced chemistry courses. 2 class hours, 2 quiz-demonstration hours.

### 110 (II). GENERAL CHEMISTRY (E)

The fundamental chemical laws and theories. Meets minimum prerequisite requirements of

CHEM 160 but not CHEM 127. 2 class hours, 2 quiz hours, 1 2-hour laboratory period.

Credit, 4.

### 111, 112. GENERAL CHEMISTRY (E)

The fundamental chemical laws and theories. Provides a sound scientific training for engineers and other students planning to take advanced courses in chemistry. 2 class hours, 1 quiz hour, 1 2-hour laboratory period.

Credit, 4.

### 113 (I), 114 (II). CHEMICAL PRINCIPLES (E)

The fundamental chemical laws and theories, including the elements of qualitative analysis. For students planning to major in chemistry and as a departmental requirement. Prerequisite, secondary school chemistry. 2 class hours, 2 discussion hours, 1 3-hour laboratory period. Credit, 4.

### 127 (I), (II). ANALYTICAL CHEMISTRY (E)

The principles of analytical chemistry, for students not majoring in chemistry. Basic laboratory techniques and operations of quantitative analysis. Prerequisite, CHEM 112 or 114. 2 lectures, 2 3-hour laboratory periods. Credit, 4.

### 160 (I). ORGANIC CHEMISTRY (E)

For students whose major department does not require a year course in organic chemistry. Concurrent enrollment in CHEM 162 required. Prerequisite, CHEM 110 or 112.

### 162 (I). ORGANIC CHEMISTRY LAB

A laboratory survey of the chemistry of the major functional groups. Concurrent enrollment in CHEM 160 required. 1 3-hour laboratory period. Credit, 1.

### 165 (I), 166 (II). ORGANIC CHEMISTRY FOR MAJORS (E)

A survey of modern organic chemistry. Explores the chemistry of carbon compounds. Emphasis on relationships between molecular structure, chemical properties, and reaction mechanisms. Concurrent enrollment in CHEM 167 or 168 required. Prerequisite, CHEM 112 or 114.

### 167 (I), 168 (II). ORGANIC LAB FOR MAJORS

Application of the experimental techniques of organic chemistry to the preparation, purification and identification of organic compounds. Concurrent enrollment in CHEM 165 or 166 required. 1 3-hour laboratory period. Credit, 1.

### 210 (I). QUANTITATIVE CHEMICAL ANALYSIS

The principles and practices of titrimetric and gravimetric analysis; separation methods; introduction to physical methods. Primarily for chemistry majors and others needing more detailed treatment than given in CHEM 127.

Prerequisite, CHEM 114 and 166. 2 lectures, 2 4-hour laboratory periods. Credit, 4.

### 213 (I). INSTRUMENTAL ANALYSIS

The theory and practice of modern analyses utilizing optical, electrical, and thermal properties. Selected modern separation methods may also be included. Prerequisites, CHEM 210, 286. 2 class hours, 1 4-hour laboratory period.

### 215 (II). THEORY OF ANALYTICAL PROCESSES

A detailed consideration of analytical topics, such as chemical equilibrium, precipitate formation, chelating agents, multistage separation, etc., having general applicability in chemical investigations. Prerequisites, CHEM 166 and 286. (Laboratory optional, 1 extra credit.)

### 216 (I), (II). CHEMICAL MICROSCOPY

Optics of the microscope, micrometry, microscopic study of fibers, crystals, physicochemical phenomena, qualitative analysis and an introduction to electron microscopy. Prerequisite, CHEM 213 or permission of instructor. 2 3-hour laboratory periods. Credit, 2.

### 217 (I), (II). MICROQUANTITATIVE ANALYSIS

Quantitative determination of carbon, hydrogen, oxygen, nitrogen, sulfur, halogens and phosphorus. Both organic and inorganic compounds will be included in microgram scale analyses. Prerequisite, CHEM 213 or permission of instructor. 1 4-hour laboratory period. Credit, 1.

### 219 (I). ELECTRONICS INSTRUMENTATION FOR SCIENTISTS

Laboratory oriented course designed for scientists which begins with electronic principles and leads through servo-systems, operational amplifiers, digital circuits, and other measurement devices. Prerequisite, one year of physics and permission of instructor. 1 class hour, 1 4-hour laboratory period.

### 241 (II). INTRODUCTORY DESCRIPTIVE INORGANIC CHEMISTRY

Chemical periodicity, reaction behavior and structural interrelationships are stressed within the framework of a systematic treatment of the chemistries of the representative and transition elements. Prerequisite, CHEM 114 or 112; concurrent enrollment in CHEM 168 recommended.

### 242. INORGANIC CHEMISTRY LABORATORY

Synthesis and characterization of a diverse selection of inorganic compounds of both the representative and transition elements. Emphasis is placed on the use of a wide range

of preparative and other experimental techniques. Prerequisite, CHEM 168 or 264.

Credit, 2.

#### 244 (II). RADIOCHEMISTRY

The character of atomic nuclei, nuclear reactions, radiation and its detection, and techniques for the study and utilization of radio-nuclides. Prerequisite, CHEM 112, or permission of instructor. 3 class hours, 1 3-hour laboratory period.

Credit, 4.

#### 246 (I), (II). THEORETICAL INORGANIC CHEMISTRY

A survey of theoretical aspects of inorganic chemistry. Topics include electronic structure and its relation to periodic properties, chemical bonding, molecular structure, coordination chemistry, acid-base theory, non-aqueous systems, and reaction mechanisms. Prerequisite, CHEM 285.

#### 261, 262. ORGANIC CHEMISTRY FOR NON-MAJORS (E)

A two-semester sequence. The chemistry of carbon compounds, with emphasis on the relationship between molecular structure and chemical properties. A background for understanding organic systems encountered in other fields. Concurrent enrollment in CHEM 263 or 264 required. Prerequisite, CHEM 112 or 114.

#### 263, 264. ORGANIC LAB FOR NON-MAJORS

Application of the experimental techniques of organic chemistry to the preparation, purification, and analysis of organic compounds. Concurrent enrollment in CHEM 261 or 262 required. 1 3-hour laboratory period.

Credit, 1.

#### 269 (II). ADVANCED ORGANIC CHEMISTRY LABORATORY

Continuation of CHEM 168. Preparations involving special techniques and use of the literature of organic chemistry. Prerequisite, CHEM 166, 168. 2 3-hour laboratory periods.

Credit, 2.

#### 271 (II). ADVANCED ORGANIC CHEMISTRY

An intensive survey of aliphatic and aromatic chemistry with emphasis on scope and limitations of reactions; mechanisms and recent developments. Prerequisite, one year of organic chemistry.

#### 272 (I). QUALITATIVE ORGANIC CHEMISTRY

Identification of unknowns, both single and mixtures of organic compounds, by physical and spectroscopic properties, reactions and preparation of derivatives. Prerequisite, one year of organic chemistry. 2 class hours, 2 3-hour laboratory periods.

Credit, 4.

#### 281 (I). ELEMENTARY PHYSICAL CHEMISTRY

For students with a limited mathematical background. Not open to B.S. chemistry majors. Prerequisites, CHEM 112 or 114; PHYSIC 142; MATH 132.

#### 282 (II). ELEMENTARY PHYSICAL CHEMISTRY

A continuation of CHEM 281. 2 class hours, 1 3-hour laboratory period.

#### 285 (I), 286 (II). PHYSICAL CHEMISTRY

The fundamental theories and laws of physical chemistry. Prerequisites, MATH 165; PHYSIC 163. Corequisites, CHEM 210 or 127.

#### 287 (I), (II), 288 (I), (II). PHYSICAL CHEMISTRY LABORATORY

Experience in modern physicochemical techniques. Prerequisites, CHEM 210; MATH 165; PHYSIC 163; or permission of instructor. Concurrent enrollment in CHEM 285, 286. 1 4-hour laboratory period.

Credit, 2.

#### 289. CHEMISTRY OF MACROMOLECULES

Introduction to the chemistry of biological and synthetic macromolecules. Emphasis on their synthesis, structure determinations, chain conformation and other properties in solution, morphology, mechanical and rheological properties in bulk. Prerequisite, one year each of organic chemistry and physical chemistry.

#### 294 (I), (II). ADVANCED PHYSICAL CHEMISTRY

Modular studies of topics of modern physical chemical interest, such as introductions to advanced thermodynamics, reaction kinetics, polymer chemistry and chain dynamics, molecular spectroscopy, structural methods, molecular orbital theory, statistical thermodynamics, scattering processes, or pulse techniques. Normally three modules are considered in one semester. Prerequisite, CHEM 286.

#### 295 (I), (II). ADVANCED PHYSICAL CHEMISTRY

Topics such as chemical thermodynamics, statistical mechanics, introductory quantum chemistry and theories of gases, liquids and solids. Prerequisite, CHEM 286.

#### 298 (II). SOPHOMORE SEMINAR

A series of seminars and a laboratory tour. Different views of chemistry through presentations by chemistry staff.

Credit, 1

#### 381 (I). CHEMICAL LITERATURE

Intended to give facility in the location of information of a chemical nature. Prerequisites, CHEM 166, 286, and a reading knowledge of German, or permission of instructor. 1 class hour.

Credit, 1

#### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department.

Credit, 1-6.

#### 388 (II). INTRODUCTION TO RESEARCH

Admission by permission of department. Each student assigned some special subject or problem in one of the several fields of chemistry. By arrangement. 10 laboratory hours.

Credit, 5.

#### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office.

Credit, 4.

#### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office.

Credit, 1-5.

#### RELATED COURSES:

##### Biochemistry

120 (II). Introduction to Biochemistry

220 (I). Elementary Biochemistry

223 (I), 224 (II). General Biochemistry

225 (I), 226 (II). Biochemistry Laboratory

#### Computer and Information Science

Chairman of Department: Professor Robert M. Graham. Professors Arbib (Director, Center for Systems Neuroscience), Foster, Kilmer, Spinelli, Wogrin (Director, University Computing Center); Associate Professors Ledgard, Riseman; Assistant Professors Clarke, Fishman, Moll, Tenney; Adjunct Professor Stone; Adjunct Associate Professor Eckhouse. Associated Faculty: Anderson (Education), Archer (Civil Engineering), Bobrow, Ehrich, Glorioso (Electrical and Computer Systems Engineering), Lenherr (Center for Systems Neuroscience), Mallary (Art), Manes (Mathematics), Peelle (Education), Sahin (Management), Stockton (Civil Engineering), Trchub (VA Hospital).

The Department of Computer and Information Science offers a wide range of undergraduate courses in the areas of Computer Systems, Theory of Computation, and Cybernetics.

While no formal undergraduate major exists in Computer and Information Science, one is currently being planned. Meanwhile, it is possible for students to seek a bachelor's degree with individual concentration (BDIC), the program being worked out individually with the COINS Director of Undergraduate Studies.

#### 101 (I). ELEMENTS OF COMPUTERS: ART AND SCIENCE (E)

An introduction to the historical and conceptual foundations of the computer as an intelligence amplifier. Topics include the early history of calculators, models of thought,



number systems, modern computing devices, and computer languages.

**102 (II). COMPUTERS AND SOCIETY (E)**  
The use of computers to solve social problems. Topics like data banks, security, computerized voting, automated health care, computer-aided instruction. The long-range impact of computers.

**122 (I), (II). INTRODUCTION TO PROBLEM SOLVING USING THE COMPUTER (E)**  
Problem solving and FORTRAN programming for students from all disciplines. Concepts associated with problem solving valid for many types of problems. Use of FORTRAN on the KRONOS time-sharing system. Laboratory included. Credit, 4.

**201 (I), (II). ASSEMBLY LANGUAGE PROGRAMMING**  
An introduction to assembly languages, through the teaching of MIXAL via time-sharing terminals and the batch operating system of the CYBER 74. Examples and exercises drawn from the field of information structures. Credit, 4.

**202 (I), (II). COMPARATIVE CONCEPTS IN PROGRAMMING LANGUAGES (E)**  
Fundamental concepts in programming languages. Topics include: data structures, scope of names, parameter passing, recursion, block-structure, string and list manipulation languages (like SNOBOL or LISP) and business oriented languages (like COBOL or RPG). Projects embrace concepts discussed. Prerequisite, COINS 122. Laboratory included. Credit, 4.

**210 (I). TRANSLATOR DESIGN**  
A project-oriented course covering techniques of language definition and translation. Particular reference to symbolic assemblers and algebraic compilers. Prerequisite, COINS 201 and 202.

**232 (II). ALGORITHMIC METHODS FOR SCIENTISTS AND ENGINEERS**  
Development of algorithmic techniques for solving large-scale scientific and engineering problems. Emphasis on applications, efficiency and special students interests. Use of APL as a major programming language. Prerequisite, COINS 122 or programming experience. Laboratory included.

**233 (I). MINICOMPUTERS FOR BIOLOGISTS AND PSYCHOLOGISTS**  
The use of small-scale digital computers for data gathering, analysis, and on-line control of experiments. Interfacing computers and logical design of input/output facilities. Especially useful for biologists and psychologists. Prerequisite, programming experience.

**252 (I). TOPICS IN NUMERICAL METHODS (E)**  
Computer-oriented numerical analysis, including linear algebra, solution of simultaneous equations, homogeneous equations, eigenvalues, solution of differential equations, solution of algebraic and transcendental equations, and functional representations. Prerequisite, COINS 122 or programming experience.

**291 (I). COMPUTATIONAL POPULATION DYNAMICS (E)**  
Vectors, matrices and eigenvector problems; deterministic and random ecosystem population models; solutions of nonlinear differential equation systems arising in population biology; analytical formulations of ecosystem stability problems, species-packing models, epidemiological problems, and the evolution of altruism. Computer simulation projects encouraged. Prerequisite, calculus; a computer programming course desirable.

**301 (I), (II). FUNDAMENTALS OF COMPUTATION (E)**  
Integrates application and theory by presenting the mathematical underpinnings of algorithms, languages, and machines; recursion and induction; models for machines, state diagrams, switching theory, and regular sets; trees; formal grammars; syntax and semantics; basic notions of automata, push-down automata, and Turing machines; proving properties of programs. Prerequisite MATH 167 and elementary computer mathematics.

**302 (I), (II). FUNDAMENTALS OF COMPUTING SYSTEMS**  
Core concepts of computer software, including assemblers and compilers, macros, loaders, operating systems, process control, memory management, input/output and protection. Prerequisite, COINS 201 and 202; COINS 335 recommended. Lab required.

**303 (I), (II). FUNDAMENTALS OF CYBERNETICS (E)**  
Integrates brain analysis and artificial intelligence to convey a basic understanding of systems and neural networks, modelling, feedback; scene analysis and pattern recognition in brains and machines; parameter adjustment and adaptation; heuristic search; and planning of complex behavior in the brains of animals and the control computers of robots. Prerequisite, COINS 122 and some theory of computation; or background in biology or psychology.

**320 (II). DEVELOPMENT OF QUALITY SOFTWARE**  
Recent developments in the study of programming as a systematic, creative activity. Notion of quality software; measurement of quality; top-down and other approaches to programming; structured programs; proofs of correctness; software engineering; psychology of programming. Prerequisites, COINS 201 and 202.

**335 (I). COMPUTER ARCHITECTURE**  
The various elements of computer design. The historical influence of certain real computers and the concepts behind them. Prerequisite COINS 201.

**350 (I). COMPUTATIONAL MODELLING**  
An introduction to probabilistic techniques such as Markov process, random walk and Monte Carlo techniques. Statistical techniques, distributions, and correlation coefficients. Brief introduction to simulation languages. Simple queues, n-person zero sum games. Selected topics generated by class interest. Prerequisite, COINS 202.

**377 (II). INTRODUCTION TO OPERATING SYSTEMS**  
The programs and techniques needed to transform computer hardware into a comprehensive computer. Topics include input/output control systems, mono-programming, multi-programming, and multi-processing. Prerequisite, COINS 302.

**383 (II). ARTIFICIAL INTELLIGENCE**  
Game-playing by machines; mathematical problem solving by machine, including geometry, algebra and calculus; mathematical theory of heuristic search; automatic theorem-proving; question answering systems; natural language processing; an introduction to robotics, vision, and planning. Prerequisite, COINS 303.

**385 (I), 386 (II). SPECIAL PROBLEMS**  
Topics by arrangement each semester. Credit, 1-6.

**387 (II). DATA AND INFORMATION STRUCTURES**  
Mathematical and practical concepts relevant to description and manipulation of data and information structures such as lists, trees, and graphs; and the relationship of these ideas to the constraints imposed by physical storage devices. Prerequisite, COINS 301 and 302. (Also listed as ECE 342.)

**RELATED COURSES:**  
**Art**  
276, 278 Computer Graphic Workshop I and II

**Electrical and Computer Engineering**  
210 Digital Circuit Theory  
278 Digital Systems Design  
342 Non-Numerical Processing  
344 Programming Structures  
346 Computer Systems Lab I  
350 Computer Systems Lab II  
354 Computer Systems Lab III  
360 Computer Graphics  
362 Engineering Cybernetics  
366 Simulation of Dynamic Systems  
368 Advanced Switching Theory  
375 Combinatorial Theory and its Applications



## Mathematics

251 Numerical Analysis I

252 Numerical Analysis II

271 Set Theory

381 Introduction to Mathematical Logic and Model Theory

## Geology and Geography

Head of Department: Professor Joseph H. Hartshorn. Professors Bromery, Farquhar, Hubert, Jaffe, McGill, Morse, Webb, Wise; Associate Professors Haggerty, Hall, Motts, Pitrat, Robinson; Assistant Professors L. Isaacson, P. Isaacson, Nelson, Niedoroda, Perry; Instructor Rice.

Geography Faculty: In charge of program Associate Professor Terence Burke. Associate Professors Hafner, Wilkie; Assistant Professors Bradley, D. Meyer, J. Meyer, Platt.

## GEOLOGY

### 100 (II). MODERN GEOLOGIC CONCEPTS (E)

Geology as both physical science and history; review of current ideas concerning origin and modification of the earth's materials and landforms; use of current processes as clues to earth history. 2 class hours, 1 2-hour laboratory period, 1 1-hour quiz-discussion, and field trips.

### 101 (I), (II). PHYSICAL GEOLOGY (E)

The nature and origin of the landscape features of the earth and their underlying rocks and structures, including the work of rivers, waves and currents, wind, and glaciers; the role of earthquakes, volcanoes, and the processes of mountain building. 2 class hours, 1 3-hour laboratory period, and field trips.

### 105 (I). GEOLOGY AND MAN (E)

Evidence for selected mineral-forming processes; minerals in industry; developments in mineral research and technology; geologic considerations to such engineering works as mines, foundations, tunnels, waterways, and airfields.

### 106 (II). THE FACE OF THE EARTH (E)

Survey of selected physical processes that shape the world we live in, as shown in a study of the landforms of the United States. Includes, but not limited to, streams and rivers, the wind, coastal erosion, ground water, volcanism, earthquakes, and glaciers. Attention to landforms in New England, to arid regions, and to our National Parks and Monuments.

### 107 (II). HISTORY OF LIFE (E)

The adaptations of selected lineages of animals to the changing environments of the geologic past. Emphasis on those groups which best illustrate evolutionary principles or

unsolved problems. Not open to those who have taken GEOL 240. 2 class hours, 1 2-hour laboratory period.

120 (II). ENVIRONMENTAL GEOLOGY (E) Principles of geology applied to regional planning in areas of conservation, land use, water resources, and water pollution; preservation of open spaces, wilderness areas, state and national park systems. Introductory geology or physical geography recommended.

### 121 (I). LUNAR AND PLANETARY GEOLOGY (E)

Application of basic geologic principles to study of terrestrial planets; processes acting on the moon and terrestrial planets; geologic history of the moon. 2 class hours, 1 2-hour laboratory-discussion period. Prerequisite, 1 semester of geology or permission of instructor.

### 160 (I), (II). INTRODUCTORY FIELD GEOLOGY

Interpretation and use of topographic maps and sections in laboratory and field; use of basic field equipment and techniques. 1 class hour, 1 5-hour laboratory period. Prerequisite, an introductory geology course. Credit, 2.

### 191 (I), (II). AN INTRODUCTION TO ROCKS AND MINERALS (E)

General survey of rock-forming minerals, the rock classes, common ore minerals, gem minerals, and semi-precious stones. Not for geology majors, but designed for foresters, landscape architects, archeologists, botanists, wildlife and natural resources students, and those interested in natural history. 2 class hours, 1 2-hour laboratory period.

### 219 (I), (II). MINERALOGY (E)

Chemical composition, physical properties, crystallography, and genesis of common minerals. Laboratory technique for recognition of minerals. Prerequisites, an introductory geology course; CHEM 111 and 112 (may be taken concurrently). 2 class hours, 2 2-hour laboratory periods, and field trips. Credit, 4.

### 220 (I), (II). INTRODUCTORY PETROLOGY

Rocks, with emphasis on constituent minerals, textural and structural features, classification, mode of occurrence, and origin. Laboratory includes introduction to petrographic methods. A sequel to GEOL 219, as the second half of a one-year study of minerals and rocks. Prerequisite, GEOL 219. 2 class hours, 2 2-hour laboratory periods, and field trips by arrangement. Credit, 4.

### 230 (I). FIELD AND STRUCTURAL GEOLOGY I

Basic methods of field geology; occurrences and recognition of geologic structure; preparation and interpretation of geologic maps; solu-

tion of simple structural problems. Prerequisites, MATH 123; either GEOL 100, 101, or 130; or alternatively GEOL 105, 106, 107, or 108 and 160. 2 class hours, 1 5-hour laboratory period, week end and holiday field trips. Credit, 4.

### 231 (II). FIELD AND STRUCTURAL GEOLOGY II

Structural and dynamic analysis of deformed rocks; introduction to tectonics; field study of complex areas. Prerequisites, GEOL 220, 230. 1 class hour, 1 5-hour laboratory period, week end and holiday field trips.

### 240 (I). INVERTEBRATE PALEONTOLOGY

The history, development, and identification of invertebrate animal fossils. Field trips by arrangement. Prerequisites, either GEOL 100, 101, or 130; or alternatively GEOL 105, 106, or 108 and 160. 3 class hours, 1 2-hour laboratory period. Credit, 4.

### 250 (I). SEDIMENTOLOGY

Analysis and origin of primary sedimentary structures; composition and classification of sedimentary rocks; and criteria for identification of depositional environments in the rock record. Prerequisite, GEOL 220. 2 class hours, 1 2-hour laboratory period, and field trips.

### 251 (II). STRATIGRAPHY AND HISTORICAL GEOLOGY

Principles of stratigraphic correlation; methods of reconstruction of earth history; tectonic evolution of selected regions. Prerequisites, GEOL 220, 230, 240, 250, or permission of instructor. 2 class hours, 1 3-hour laboratory period.

### 280 (II). ENGINEERING GEOLOGY

Not open to geology majors. Materials and surface features of the earth with emphasis on engineering problems; map reading as related to the phenomena of physical geology. 2 class hours, 1 3-hour laboratory period or field trip.

### 311 (I). OPTICAL MINERALOGY

Principles of optics; optical properties of minerals and methods for their measurement; relationship between optical properties and crystallography; microscopic techniques for mineral identification; crystal chemistry of rock-forming minerals. Prerequisites, GEOL 220, PHYSIC 141 and 142. 3 class hours, 1 3-hour laboratory period.

### 317 (I). AQUEOUS GEOCHEMISTRY (E)

Chemical processes affecting the distribution and circulation of chemical compounds in natural waters, and the formation of an adequate theoretical basis for chemical behavior of ocean water, estuaries, lakes, and ground-water and soil-water systems. 3 1-hour laboratory sections. Prerequisites: CHEM 111, 112; introductory geology recommended but not absolutely necessary.

318 (II). **SEDIMENTARY GEOCHEMISTRY**  
The evolution of sedimentary rocks, the geochemical cycles of the major elements in the earth's crust, and the applications of isotope geochemistry. Prerequisite: CHEM 111, 112, or permission of instructor.

321 (II). **PETROGRAPHY**  
Identification of minerals in thin section; common igneous, sedimentary, and metamorphic rocks in thin section; petrographic calculations and measurements; introduction to petrogenetic theory. Field examination of selected igneous and metamorphic rocks. Prerequisites, GEOL 220 and GEOL 311. 3 class hours, 1 3-hour laboratory period, and field trips.

330 (II). **TECTONICS**  
Past and present mechanisms creating the broader framework of global geology, mountain-building, ocean-basin structure, continental drift, mantle processes, continental evolution, early history of the earth, structural geology of selected key regions of the globe. Prerequisites, GEOL 231, 220. 2 2-hour class meetings. Given in alternate years with GEOL 334.

332 (I). **ADVANCED GEOLOGIC MAPPING**  
The complete series of operations required for the publication of a geologic map, including field location and accurate drawing of contacts, collection and interpretation of field notes, automated reduction of geologic data, preliminary and final drafting, and methods of reproduction. Field studies in areas of well defined stratigraphic units near Amherst. Prerequisites, GEOL 220 and 231 or equivalent training. Seniors can incorporate mapping done in this course into an Honors Thesis to be completed 2nd semester. 1 class hour, 1 8-hour laboratory period.

334 (I). **ASTROGEOLOGY**  
Geology of the solar system with emphasis on the solid bodies: age, sequence of events, composition, surficial and internal geologic processes. Photogeologic mapping of selected portions of Moon and Mars using recent imagery from the space program. Prerequisites, GEOL 231, 220. 2 2-hour class meetings. Given in alternate years with GEOL 330.

345. **PALEOECOLOGY (E)**  
A general survey of relations between fossil organisms and their environments. Emphasis on functional morphology, community structure, and paleobiogeography.

351 (I). **GEOMETRICS**  
Design of geological experiments; the collection and analysis of quantitative data in geology. Prerequisite, upper class standing in geology.

355 (I). **DESCRIPTIVE PHYSICAL OCEANOGRAPHY**  
Physical properties of sea water and their variations; water masses and their circulation patterns; interaction between ocean and atmosphere; dynamics of waves, tides, and ocean currents; techniques of oceanographic study. Prerequisites, PHYSIC 141 or 161, upper class standing or permission of instructor. MARSCE 225 and calculus recommended. 3 class hours and field trips.

360 (I). **GEOMORPHOLOGY**  
Origin and development of landforms in relation to geological processes, climate, and tectonic history. Application of geomorphic methods to interpretation of geologic history. 2 class hours, 1 3-hour laboratory period. Prerequisite, GEOL 230 or permission of instructor.

366 (II). **GLACIAL GEOLOGY**  
Sedimentary deposits related to glaciers; erosional and depositional processes and the recognition of erosional and constructional landforms; the origin of glaciers and forms of glaciers; Pleistocene history and stratigraphy. Peripheral subjects include shifting sea level, radiocarbon dating, palynology, the paleontological record, and Early Man. Prerequisite, either GEOL 100, 101, 130, or permission of instructor. 2 class hours, 1 3-hour laboratory period. Field trips by arrangement.

368 (II). **PHOTO GEOLOGY AND REMOTE SENSING**  
Techniques for making measurements and preparing base maps and geologic maps from vertical and oblique aerial photos; interpretation of cultural, geologic, and geomorphic features; introduction to remote sensing methods, including multispectral aerial photography, infrared imagery, and radar. Prerequisite, GEOL 231; GEOL 360 recommended. 6 laboratory and lecture hours to be arranged.

370 (I). **GEOPHYSICS**  
The physics of the earth and the gravitational, magnetic, electrical, and seismic methods of geophysical exploration. Laboratory problems and computations. Prerequisites, PHYSIC 141, 142; GEOL 230 and 220 or permission of instructor. 3 class hours and laboratory work by arrangement.

385 (I), 386 (II). **SPECIAL PROBLEMS**  
Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

387. **INTRODUCTORY ENVIRONMENTAL PROBLEMS**  
Opportunity for undergraduate research participation in environmental studies. May be repeated.. Credit, 2.

389 (I), (II). **FIELD PROBLEMS**  
Directed field study and/or research. With

permission of the department may be used to satisfy B.S. field experience requirement. Prerequisites, GEOL 220 and 230. Credit, 2-6.

391 (I), 392 (II). **SEMINAR**  
Participation in department's professional seminar. Prerequisite, GEOL 220, 230, or permission of department.  
Credit, 1 each semester (limited to 2 credits toward graduation).

398. **SENIOR HONORS**  
Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

399. **SENIOR HONORS**  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## GEOGRAPHY

145 (I), (II). **PHYSICAL ENVIRONMENT (E)**  
An introduction to physical aspects of geography by examining the interrelationships among climate, vegetation, soils, and landforms. 2 class hours, 1 2-hour laboratory period.

155 (I), (II). **INTRODUCTION TO HUMAN GEOGRAPHY (D)**  
The spatial attributes of human societies; population, cultural characteristics, settlement, and economic activity. Selected regional case studies. 2 class hours, 1 2-hour laboratory period, and field trips.

156 (I), (II). **HUMAN GEOGRAPHY (D)**  
Honors student section with an individual lab meeting time, but joint lectures with GEOG 155.

200 (II). **GEOGRAPHY OF ANGLO-AMERICA (D)**  
The contemporary physical and cultural geography of the United States and Canada approached by region and topic.

220 (I). **GEOGRAPHY OF LATIN AMERICA (D)**  
A survey of the spatial organization of cultural and physical regions of Latin America. Emphasis on the dynamic change processes affecting man's horizontal linkages and use of the environment.

225 (II). **ENVIRONMENTAL PERCEPTION AND SPATIAL BEHAVIOR**  
Exploration of the ways different cultural subgroups perceive and organize their space and environment. Emphasis on both individual and group acts that lead to evolution of the cultural landscape.

231 (I). **GEOGRAPHY OF EAST ASIA (D)**  
An introductory examination of the geograph-



ical components of East Asia, China, Japan, and Korea with emphasis on physical, human, and economic resources and their continuity. Prerequisite, GEOG 135 or 155 or permission of instructor.

## 232 (II). GEOGRAPHY OF SOUTHEAST ASIA (D)

An introductory survey of the cultural, economic, and human geographic components of Southeast Asia that contribute to regional uniformity and diversity. Emphasis on contemporary problems of regional development and integration. Prerequisite, GEOG 135 or 155 or permission of instructor.

## 240 (I). QUANTITATIVE METHODS IN GEOGRAPHY

Applications of statistical techniques to geographic problems: probability functions useful in geographic analysis, methods of spatial sampling, point pattern analysis, and spatial relations and areal association.

## 250 (I), (II). CARTOGRAPHY

A systematic introduction to the presentation of physical and human variables cartographically. Emphasis on drafting techniques, map making, and problems of compilation, analysis, and graphic presentation of data. 2 2-hour lecture and laboratory periods.

## 255 (I). CLIMATIC ENVIRONMENT (E)

The general circulation of the atmosphere and the effect of climate on man. Topics include urban climatology, modification of weather and climate, and climatic change.

## 258. CLIMATIC CHANGE (E)

Changes in climate on a local, regional, and global scale both in the past and recently. Man's role in modifying the atmosphere.

## 260 (I). ECONOMIC GEOGRAPHY (D)

The distribution, production and utilization of the natural resources and commodities on which man's livelihood depends and the problems which they pose.

## 263 (II). LAND USE CONTROL

Legal and geographic concepts relating to planning and management of land use in United States, including an analysis of historical and philosophical roots of public policy and federal and state programs. Case studies used.

## 266 (I). ENVIRONMENT, SPACE, AND RURAL SOCIETIES

The form and content of the rural landscape within the framework of spatial organization and location. Emphasis on settlement and land use patterns, forms of rural economy, and environmental factors. Geographic models of spatial analysis and location used to consider these areas cross-culturally in developed and developing societies. Prerequisites: GEOG 135, 155.

## 270 (I). URBAN SPATIAL ORGANIZATION (D)

Discussion of concepts of systems of cities, including evolution of the urban pattern, city types, settlements as manufacturing and service centers, and concepts of the internal structure of urban areas, including land use systems, location of residences, location of commercial and manufacturing areas, intraurban movements.

## 271 (II). SEMINAR IN URBAN GEOGRAPHY

A selected topic in urban geography. For example, cross-cultural spatial structure of cities, Afro-American urban spatial organization, or urban regional development. Prerequisite, GEOG 270 or permission of instructor.

## 280 (II). POLITICAL GEOGRAPHY (D)

The spatial interaction between political regions and geographic space considered in its physical and cultural components. Emphasis on the nation-state and on problems between nation-states. Prerequisite, GEOG 135 or 155 or POLSCI 160-161 or permission of instructor.

## 385 (I), 386 (II). SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

## 391 (I), 392 (II). SEMINAR

Some restricted problem or region within geography. Prerequisites, two upper-division courses in geography or permission of geography staff.

## 396 (I), (II). DEPARTMENT SEMINAR

Seminar for majors, stressing current issues and developments in geography. Activities include faculty presentation of research, talks by visiting geographers in academic and non-academic employment, student presentation of research, and field trips. Credit, 1.

## 397 (I). SENIOR SEMINAR

Seminar for senior year majors, focusing on application of geographic concepts, methods, and skills to problems. Themes vary depending on faculty and student interest.

## 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

## 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office.

## Mathematics and Statistics

*Acting Head of Department:* Professor Jin-Chen Su. Professors Chen, Cohen Cullen, Fischer, Foulis, Hayes, Holland, Jacob, Janow-

itz, Kundert, Liu, Mann, Martindale, Oakland, Randall, Schweizer, Skibinsky, Stone, Strother, Su, Van Ryzin, Wagner, Wang, Whaples; Associate Professors Allen, Bennett, Borrego, Catlin, Connors, Cook, Dickinson, Eisenberg, Fogarty, Horowitz, Humphreys, Knightly, H-T Ku, Lavalley, Manes, Reed, Rosenkrantz, Rudvalis, St. Mary, Sicks, Stockton, Wattenberg; Assistant Professors Bussell, Cattani, Chang, Clark, Dahiya, Ellis, Fazal, Gauger, Geman, Gleit, Hoffman, Hurt, Kaplan, Killam, Korwar, M-C Ku, Norman, Shaw, Williams, Zinn; Lecturer Norkin (Administrative Head).

## MATHEMATICS

The requirements for a major in mathematics are the successful completion of: 1) MATH 165 (or 166) and 167; 2) a two-semester sequence in each of two of the groups Algebra, Analysis, Applied Mathematics, and Geometry and Topology listed below; 3) one course in a third of these four groups; 4) three additional 3-credit, upper division (numbered above 199, including MATH 187 but not including MATH 255) courses in mathematics or certain related fields (a list of the specific mathematics-related courses which may be used to satisfy this requirement will be found in the Mathematics Information Leaflet); 5) two courses in engineering or in some one physical or biological science. In addition, a major is expected to have a cumulative quality point average of at least 2.0 in all mathematics courses numbered 165 or above taken at the University and used to satisfy these requirements.

The Algebra group is 211-212 and 311-312. The Analysis group is 225-226, 248, 325-326, 231 (187)-332, 231 (187)-334, 331-332, 331-334. The Applied Mathematics group is 231 (187), 241-242, 247-248, 251-252, 257, 231 (187)-332, 231 (187)-334, 345-346, MATH STATIS 248. The Geometry-Topology group is 261-262, 363 and 365-366. The two-semester sequences in this list which may be used to satisfy requirement 2), above, are those pairs marked with a hyphen. Note that either pair 231 (187)-332 or 231 (187)-334 can be used as a two-semester sequence in either Analysis or Applied Mathematics, but not in both.

Students wishing to take upper level mathematics courses should note that MATH 167 is a prerequisite for most of them. MATH 167 may be taken at any time after the student has finished one semester of calculus.

Further information may be obtained from the Mathematics Information Leaflet, available from the department office, or from the departmental chief adviser.

## 011. ELEMENTARY COLLEGE ALGEBRA

For those students who offer only one unit of algebra for entrance. A review of elementary algebra and a more thorough study of such topics as quadratic equations, exponents and radicals. No Credit.



**100. MATHEMATICS IN THE MODERN WORLD (E)**

A cultural presentation of some mathematical ideas to demonstrate both the scientific and the humanistic values.

**101. ALGEBRAIC REVIEW**

A rapid review of algebraic manipulations and definitions utilized in calculus. Topics include common subsets of the real numbers; sums, products, and quotients of polynomials; factoring, rational expressions; exponents and radicals; linear and quadratic equations; radical equations, linear and quadratic inequalities; equations and inequalities involving absolute values. 4 class hours for one-third semester. *Credit, 1.*

**102. ANALYTIC GEOMETRY WITH ELEMENTARY FUNCTIONS**

An introduction to the function concept and analytic geometry. Topics include relations and functions; one-to-one functions and their inverses; linear, quadratic, and other polynomial functions; exponential and logarithmic functions; lines; conic sections. Prerequisite: MATH 101. 4 class hours for one-third semester. *Credit, 1.*

**103. PRECALCULUS TRIGONOMETRY**

An introduction to trigonometry covering topics considered essential for standard calculus. Topics include definitions and graphs of cosine, sine, tangent, cotangent, secant, and cosecant; essential identities; introductory triangle trigonometry. Prerequisite, MATH 102. 4 class hours for one-third semester. *Credit, 1.*

**110. ELEMENTARY TECHNIQUES OF MATHEMATICS (E)**

A survey of several specific topics designed to acquaint the student with the general nature of mathematics. Topics may include logic and sets, mathematical systems, calculus, probability, statistics, linear programming, and game theory.

**112. FINITE MATHEMATICS (E)**

Finite mathematics with applications in probability. Topics chosen from logic, algebra of sets, and elementary combinatorial analysis. Topics include truth tables, implication, permutations and combinations, binomial theorem, conditional probability, Bayes' Theorem, expected value, stochastic processes and Markov chains.

**120. MATHEMATICS FOR BUSINESS I (E)**  
(replaces former 115, 116, 117 sequence)

Designed for School of Business Administration students. Linear and analytic mathematical methods and their applications to business. Linear systems of equations, matrices, vectors, Markov chains, linear programming, derivatives. Credit not given after MATH 112, 115, 116, 118, or 167.

**121. MATHEMATICS FOR BUSINESS II (E)**  
(replaces former 115, 116, 117 sequence)

Continuation of MATH 120. Extrema, integration, partial derivatives. Credit not given after MATH 117, 119, 128, 132, 136, 138, or 165. Prerequisite, MATH 120.

**127. CALCULUS FOR THE LIFE AND SOCIAL SCIENCES I (E)**

Introduction to differential and integral calculus. Applications to the life and social sciences stressed. Credit given for only one of the courses 116, 118, 127, 131, 135, 137, 146. Prerequisites, high school algebra, analytic geometry.

**128. CALCULUS FOR THE LIFE AND SOCIAL SCIENCES II (E)**

Continuation of MATH 127. Credit given for only one of the courses 117, 119, 121, 128, 132, 136, 138. Prerequisite, MATH 127.

**131. CALCULUS I (E)**

Introduction to differential and integral calculus of functions of a single variable: continuity, derivatives, extrema, curve sketching, the integral, elementary integration techniques. Primarily for students in the sciences. Credit given for only one of the courses 116, 118, 120, 127, 131, 135, 137, 146. Prerequisites, high school algebra, plane geometry, trigonometry, and analytic geometry of lines and conic sections, or MATH 101, 102, and 103. *Credit, 4.*

**132. CALCULUS II (E)**

Continuation of MATH 131. Integration techniques, limits, partial derivatives, integrals as limits, improper integrals, theorems of Cauchy and Taylor, infinite series and power series, smooth curves. Credit given for only one of the courses 117, 119, 121, 128, 132, 136, 138. Prerequisite MATH 131/135/137. 4 class hours. *Credit, 4.*

**137. HONORS CALCULUS I (E)**

An enriched version of MATH 131 for those wishing a deeper knowledge of the subject matter. Graded by the standards of MATH 131. Credit given for only one of the courses 116, 118, 120, 127, 131, 135, 137, 146. Prerequisites, some demonstrated mathematical aptitude and permission of department.

**138. HONORS CALCULUS II (E)**

An enriched version of MATH 132 for those wishing a deeper knowledge of the subject matter. Graded by the standards of MATH 132. Credit given for only one of the courses 117, 119, 121, 128, 132, 136, 138. Prerequisites, some demonstrated mathematical aptitude, MATH 131/135/137, and permission of department.

**141. MATHEMATICS OF FINANCE (E)**

The mathematical principles of simple and compound interest, annuities, depreciation, valuation of bonds, and insurance.

**143, 144. SPECIAL OR EXPERIMENTAL LOWER DIVISION COURSE (E)**

Courses taught under these numbers include one-time-only courses offered upon the availability of faculty with special interests or upon petition of twelve or more students; experimental courses; or interdisciplinary studies.

**146. IDEAS OF THE CALCULUS (E)**

Origins and development of the major concepts of the calculus; analytic geometry, continuity, the derivative, the integral, differential equations. Intended for students not needing a working knowledge of calculus. Credit given for only one of the courses 116, 118, 127, 131, 135, 137, 146. Prerequisites, high school algebra and geometry.

**151. BASIC CONCEPTS OF ALGEBRA (E)**

The real numbers as a field. Linear and quadratic equations and inequalities. Systems of linear equations and inequalities. Congruence. Complex numbers. Polynomials. Algebraic structures. Functions. Highly recommended for prospective elementary school teachers. Credit not allowed for MATH 151 after MATH 211. Prerequisite, MATH 110 or equivalent.

**165. MULTIVARIABLE CALCULUS (E)**

Functions of several variables, partial derivatives, multiple integrals, theorems of Green, Stokes, and Gauss. Prerequisite, MATH 132/136/138.

**166. HONORS MULTIVARIABLE CALCULUS (E)**

An enriched version of MATH 165, for those wishing a deeper knowledge of the subject matter. Graded by the standards of MATH 165. Prerequisites, MATH 132/136/138 and 167, and permission of department.

**167. INTRODUCTION TO LINEAR ALGEBRA (E)**

Vector spaces over the real field, linear independence, linear equations, bases and dimension, inner product spaces, linear transformations and matrices, determinants, eigenvalues, applications to geometry. Corequisite, 2nd semester of calculus.

**168. LINEAR ALGEBRA LABORATORY**

A computer laboratory for MATH 167. Concurrent enrollment in MATH 167 required. *Credit, 1.*

**191, 192. FRESHMAN SEMINAR (E)**

A development of one or more topics in mathematics with extensive student participation. Intended for freshmen with mathematical interests and abilities. 191, Fall; 192, Spring. Prerequisite, permission of instructor. 1 to 3 class hours. *Credit, 1-3.*

**200. FUNDAMENTAL CONCEPTS OF MATHEMATICS (E)**

Non-axiomatic propositional calculus (with truth tables), basic quantification theory and set algebra. Binary relations, equivalence relations, partitions, functions. Development of basic algebraic and topological features of real numbers from the axioms for a complete ordered field. Effective with the class of 1979, MATH 200 may not be counted for major credit after the completion of any 200 level Mathematics course. Prerequisite, permission of instructor.

**211. INTRODUCTION TO MODERN ALGEBRA I (E)**

Introduction to groups, rings, and fields. Not for credit after MATH 311. Prerequisite, MATH 167.

**212. INTRODUCTION TO MODERN ALGEBRA II (E)**

Continuation of MATH 211. Algebraic field extensions and solution by radicals, canonical forms of matrices, quadratic forms, theory of groups, or other topics in algebra. Not for credit after MATH 312. Prerequisite, MATH 211.

**225. ADVANCED CALCULUS I (E)**

Elementary topology of the line and Euclidean  $n$ -space, continuous functions, Riemann integration, infinite series and power series. Not for credit after MATH 325. Prerequisites, MATH 165/166 and MATH 167.

**226. ADVANCED CALCULUS II (E)**

Continuation of MATH 225. Multivariate analysis and the theorems of Green, Gauss, and Stokes. Not for credit after MATH 326. Prerequisite, MATH 225.

**231. ORDINARY DIFFERENTIAL EQUATIONS FOR SCIENTISTS AND ENGINEERS (E)**

First and second order equations, elementary theory of Laplace transforms, systems with constant coefficients. Not for credit after MATH 331. Prerequisite, MATH 132/136/138. MATH 165/166 recommended as a corequisite.

**241. APPLIED ANALYSIS I**

Complex analysis including analytic functions, residues, and conformal mappings; superposition of solutions of linear differential equations; orthogonal functions and Fourier series. Prerequisite, MATH 165/166.

**242. APPLIED ANALYSIS II**

Continuation of MATH 241. Properties of Fourier series; boundary value problems; orthogonal functions; Laplace and Fourier transforms; applications to physical and engineering sciences. Prerequisite, MATH 241; differential equations and a year of physics desirable.

**247 (I), (II). INTRODUCTION TO PROBABILITY AND STATISTICS**

A survey of basic topics in both discrete and continuous spaces (sample spaces, algebra of events, combinatorics, conditional probability and independence, random variables, densities and distribution functions.) Also, special discrete (binomial and Poisson) and continuous (normal, chi-square, gamma) distributions. Expectation,  $n$ -dimensional distributions, weak law of large numbers and central limit theorem. Prerequisite, MATH 165.

**248 (I). TOPICS IN PROBABILITY THEORY**

A one-semester course intended for those Math majors who have an interest in probability and stochastic processes. Possible topics are: random walks, martingales, and the gambler's ruin problem; generating functions and branching processes (emphasizing stochastic models in biology); renewal theory; classical limit laws and sums of independent random variables; Markov chains; ergodic theory. Prerequisites, MATH 167 and 247.

**251. NUMERICAL ANALYSIS I**

A first course in techniques of numerical approximation in analysis and algebra. Not for credit after COINS 252. Prerequisites, MATH 165/166, and COINS 122 or knowledge of basic FORTRAN

**252. NUMERICAL ANALYSIS II**

Continuation of MATH 251, including numerical solution of partial differential equations. Prerequisite, MATH 251

**255. MATHEMATICS FOR THE LIFE AND SOCIAL SCIENCES**

Infinite series, finite difference equations, and differential equations with applications from the life and social sciences. Cannot be taken for credit after MATH 187 or 231 nor for upper division mathematics major credit. Prerequisite, one year of calculus.

**257. LINEAR PROGRAMMING AND THEORY OF GAMES**

The Simplex Method and extensions, duality theorems, transportation problems and other applications. Finite two-person zero-sum games and the fundamental theorem. Prerequisite, MATH 167 or permission of instructor.

**261. AFFINE AND PROJECTIVE GEOMETRY I**

Coordination of the Desarguesian affine plane, the projective plane as an extension of the affine plane. Highly recommended for prospective secondary school mathematics teachers. Prerequisite, MATH 167 or permission of instructor.

**262. AFFINE AND PROJECTIVE GEOMETRY II**

Continuation of MATH 261. Topics from

affine, projective, Euclidean, and non-Euclidean geometry. Prerequisite, MATH 261.

**271. THEORY OF NUMBERS**

Euclidean algorithm, prime numbers, congruences, quadratic reciprocity, further topics in number theory. Recommended for prospective high school mathematics teachers. Prerequisite, MATH 167 or permission of instructor.

**275. TOPICS IN THE HISTORY OF MATHEMATICS**

A detailed examination of the work of a single great mathematician, the mathematics of a single historical period, or the historical development of a single mathematical idea. Prerequisite, MATH 165/166.

**299. PROBLEM SEMINAR**

For students with strong interest and ability in mathematics. Meets weekly in small sections to present and discuss solutions to challenging problems taken from a variety of sources. May be repeated for credit. Prerequisite, permission of instructor. One class hour. Credit, 1.

**311. THEORY OF GROUP REPRESENTATIONS (E)**

Abstract groups, subgroups, quotient groups, homomorphisms, representations, irreducible representations, characters, orthogonality relations. For students qualified to study algebra at a significantly higher level of abstraction than MATH 211. Prerequisites, MATH 167 and permission of instructor. Credit, 4

**312. ADVANCED TOPICS IN ALGEBRA (E)**

Topics to be chosen from: rings, integral domains, modules over principal ideal domains, field extensions, and Galois theory. Prerequisite, MATH 311, or MATH 211 and permission of instructor. Credit, 4

**325. INTRODUCTORY MODERN ANALYSIS I (E)**

Basic topology of Euclidean  $n$ -space and metric spaces, convergence of sequences and series, continuous functions and their local and global properties. Prerequisites, MATH 165/166 and MATH 167. Credit, 4.

**326. INTRODUCTORY MODERN ANALYSIS II (E)**

Continuation of MATH 325. Differentiation, Riemann integration, sequences and series of functions, functions of several variables. Prerequisite, MATH 325. Credit, 4.

**331. ORDINARY DIFFERENTIAL EQUATIONS**

First and second order equations, existence and uniqueness theorems, systems of equations. Prerequisites, MATH 165/166 and MATH 167.



**332. TOPICS IN ORDINARY  
DIFFERENTIAL EQUATIONS**

Topics chosen from: Sturm-Liouville theory, series solutions, stability theory and singular points, numerical methods, transform methods. Prerequisite, MATH 187 or MATH 231 or MATH 331. Credit, 4.

**334. INTRODUCTION TO PARTIAL  
DIFFERENTIAL EQUATIONS**

Classification of second order partial differential equations, wave equation, Laplace's equation, heat equation, separation of variables. Prerequisites, MATH 165/166, MATH 167, and MATH 187 or MATH 231 or MATH 331. Credit, 4.

**345. LINEAR ALGEBRA FOR APPLIED  
MATHEMATICS**

Introduction to vector spaces, inner products, and matrices followed by study of linear transformations, tensors, determinants, orientation, the spectral theorem for normal operators, complexification, real normal operators, and exterior algebra. Prerequisite, MATH 167. Credit, 4.

**346. VECTOR AND TENSOR ANALYSIS  
WITH APPLICATIONS**

Continuation of MATH 345. Fréchet derivatives, the inverse and implicit function theorems, vector and tensor fields, exterior differentiation, differential forms, differentiable manifolds. Prerequisites, MATH 345 and MATH 165/166. Credit, 4.

**363. DIFFERENTIAL GEOMETRY**

Differential geometry of curves and surfaces in Euclidean 3-space using vector methods. Prerequisites, MATH 165/166 and MATH 167, or permission of instructor. Credit, 4.

**365. TOPOLOGY I**

Introduction to the topology of metric spaces and topological spaces: metrics, topologies, continuity, connectedness, compactness. Prerequisite, MATH 225, or MATH 325, or permission of instructor. Credit, 4.

**366. TOPOLOGY II**

Introduction to the geometric ideas behind algebraic topology. Polyhedra, manifolds, Jordan curve theorem, homology mod 2, classification of surfaces, Brouwer fixed-point theorem. Prerequisites, MATH 211 or 311, and MATH 365. Credit, 4.

**371. SET THEORY**

Basic properties of sets. Ordered sets. Complete ordered sets. Well-ordered sets. Cardinal and ordinal numbers. Axiom of choice, well-ordering theorem, and Zorn's lemma. Cardinal arithmetic. Highly recommended for continuing mathematics majors. Prerequisite, MATH 167 or permission of instructor. Credit, 4.

**381 (I). INTRODUCTION TO  
MATHEMATICAL LOGIC AND  
MODEL THEORY**

A one-semester course in mathematical logic and model theory. Topics include basic concepts of the propositional and predicate calculi, first order models, the completeness theorem and the Lowenheim-Skolem theorem. Turing machines, the halting problem and Godel's incompleteness theorem discussed. Prerequisite, MATH 211 or permission of instructor. Credit, 4.

**385, 386, 387, 388. SPECIAL PROBLEMS**

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

**398. SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

**399. SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

**STATISTICS**

There is no undergraduate major in statistics. The curriculum is intended for those who wish to prepare themselves for graduate work in statistics and for those who require statistics as a basic preparation for their own subject-matter discipline. Cognate courses are needed to supply a basis for mature thinking. The statistical specialist should choose, according to his or her interests, cognate courses from such fields as: animal and plant breeding, biology, computer science, econometrics, engineering, genetics, mathematics, market research, psychology, and sociology. Students who expect to do graduate work in statistics should take MATH 247 and STATIS 248. Statistics leans heavily on mathematics and most of the prerequisites for the advanced statistics courses will come from MATH 165/166 (calculus), MATH 231 or MATH 331 (differential equations), and a course in matrix algebra such as MATH 167.

**121 (I), (II). ELEMENTARY STATISTICS  
(E)**

Selected topics in elementary probability and statistics: discrete models for chance experiments, conditional probabilities; "odds" and betting schemes, combinatorics, averages and standard deviation, random sampling, binomial and normal distributions, regression, statistical inference, chi square test. Students who intend to use statistics as a research tool, but who do not have a calculus background, should elect STATIS 231, 232. Students with calculus background should elect STATIS 315, 316. Credit given for only one of the courses STATIS 121, 140, 231, 315.

**140. STATISTICS FOR BUSINESS (E)**

Required of all undergraduates in the School of Business Administration. A one-semester introductory course. Descriptive statistics, a small amount of probability theory and an introduction to the ideas of statistical inference. Topics include frequency distributions and measures of central tendency and of dispersion, linear regression, probability, the binomial and normal distributions, internal estimation and hypothesis testing.

**231. INTRODUCTION TO  
FUNDAMENTALS OF STATISTICAL  
INFERENCE I (E)**

Random experiments and probability models; independence; conditional probability; sampling; random variables; data representations; special distributions, deduction and inference.

**232. INTRODUCTION TO  
FUNDAMENTALS OF STATISTICAL  
INFERENCE II (E)**

Point, interval and model estimation; hypothesis testing; optimality concepts; power; least squares techniques; decision theoretic notions. Prerequisite, STATIS 231.

**248 (I), (II). A SURVEY OF STATISTICS**

Intended for mathematics majors interested in statistics. A one-semester introductory course leading toward further study in statistics. Topics include the theory of estimation, testing of hypothesis, analysis of variance, regression analysis and goodness of fit tests. Prerequisite, MATH 247.

**251 (II). ELEMENTARY LEAST SQUARES,  
REGRESSION AND ANALYSIS OF  
VARIANCE (E)**

Theory of least squares, analysis of variance, simple linear and multiple regression, and application of these techniques to the real data. Prerequisite, STATIS 121 or 232.

**261 (I). DESIGN OF EXPERIMENTS  
(Methods)**

Purpose of experimental designs and their basic assumptions; individual comparisons, components of error, confounding; applications from various fields. Prerequisite, STATIS 121, 232, or 316.

**262 (II). ADVANCED STATISTICAL  
ANALYSIS OF EXPERIMENTAL  
DATA**

Analysis of data with disproportionate subclass numbers. Includes the method of fitting constants, the method of weighted squares of means, absorption of equations, expectations of mean squares, and tests of hypotheses. Prerequisite, STATIS 261.

**271 (I). SURVEY SAMPLING**

Theory and practice of sampling; optimum allocation of resources, estimation of sample size, various sampling methods, ratio and



regression estimates, problem of non-response. Prerequisite, STATIS 121, 232, or 316.

#### 272 (II). SAMPLING THEORY AND METHODS

Problems and methods of samplings; production and quality control, acceptance sampling, OC and ASN curves, types and properties of estimators. Prerequisite, STATIS 121, 232, or 316.

#### 281 (II). MULTIVARIATE ANALYSIS (Methods)

Applications of the theory in STATIS 282 to actual problems; research studies by the students, critiques of published research, or analysis of other bodies of data. Prerequisite, STATIS 251 or 316.

#### 282 (II). MULTIVARIATE ANALYSIS (Theory)

Correlation and regression, principal components, canonical analysis, analysis of dispersion and covariance, tests of homogeneity, discriminant functions. Prerequisite, STATIS 316.

#### 315 (I). INTRODUCTION TO THE THEORY OF STATISTICS I (E)

Probability, random variables, probability distribution (with emphasis on the binomial and normal distributions), mathematical expectation, bivariate and multivariate distributions, sampling distributions, the central limit theorem, point estimation, maximum likelihood estimators, interval estimation. Prerequisite, MATH 117/119 or MATH 128 or MATH 132/136/138.

#### 316 (II). INTRODUCTION TO THE THEORY OF STATISTICS II (E)

Interval estimation, hypothesis testing, analysis of variance, regression, correlation, decision theory. Prerequisite, STATIS 315.

#### 350 (II). TOPICS IN STATISTICS

An intermediate course for mathematics majors. Topics may vary from year to year among the following: sampling theory, sequential analysis, decision theory, non-parametric statistics, linear statistical models, Bayesian methods and multivariate analysis. Prerequisite, MATH 247.

#### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

#### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4

#### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By

arrangement with Department and/or Honors Office. Credit, 1-5.

### Microbiology

*Acting Head of Department:* Professor Robert P. Mortlock. Professors Canale-Parola, Cox, Thorne; Associate Professors Dowell, Holt, Lessie, Wilder; Assistant Professors Czarnecki, Norkin, Reiner.

Microbiology majors are required to have broad training in collateral sciences; minimum requirements include chemistry through quantitative analysis and organic, one year each of introductory biological science and physics, and mathematics through calculus. Those students contemplating graduate or professional school study are advised to emphasize stronger training in these collateral sciences, especially physical chemistry and biochemistry. Courses in microbiology are designed to offer fundamental training in the basic core areas and disciplines of this field. Microbiology majors are required to take 17 credits of upper division departmental courses including MICBIO 250, 251, 280, 340, 391 and 392, plus 2 Microbiology elective courses.

#### 140 (I), (II). BIOLOGY OF MICROORGANISMS (E)

The microbial world, including history, structure, growth, ecology, physiology, pathogenesis, and microbial genetics. Lectures supplemented with visual aid material.

#### 141 (I), (II). BIOLOGY OF MICROORGANISMS

Open only to students concurrently registered for MICBIO 140. 1 3-hour laboratory period. Prerequisite, MICBIO 140 or concurrent registration. Credit, 1.

#### 250. GENERAL MICROBIOLOGY I (E)

Cytology, pathogenic bacteriology, immunology and virology. Designed for students intending to take more advanced courses in microbiology and for other science majors. Prerequisites: one semester of biological science, and completion of or concurrent registration in a course in organic chemistry. 2 1-hour lectures, 1 3-hour laboratory.

#### 251. GENERAL MICROBIOLOGY II (E)

Ecology, physiology and genetics of microorganisms. Designed for students intending a career in microbiology, or professional school, such as medical or dental school. Prerequisites, a college course in biological science, and completion of or concurrent registration in a course in organic chemistry. MICBIO 250 not required but strongly recommended. 2 1-hour lectures, 1 3-hour laboratory.

#### 280 (II). PATHOGENIC BACTERIOLOGY

The pathogenic bacteria, their interactions with host defenses and the precise mechanisms whereby they produce disease. Prereq-

uisite, MICBIO 250. 2 class hours, 2 3-hour laboratory periods. Credit, 4.

#### 310 (I). IMMUNOLOGY

The nature of antigens and antibodies, their interactions and significance in resistance and hypersensitivity. Prerequisite, MICBIO 250. 2 class hours, 2 3-hour laboratory periods.

Credit, 4

#### 320 (II). MAMMALIAN VIROLOGY AND TISSUE CULTURE

Properties of animal cells in tissue culture. Mechanisms by which viruses penetrate, replicate in, and produce morphological and functional changes in animal cells. Laboratory exercises on cell and virus propagation in tissue culture, virus assay techniques, and neoplastic transformation. Prerequisite, MICBIO 250, or permission of instructor. 2 class hours, 2 3-hour laboratory periods. Credit, 4.

#### 340 (II). MICROBIAL PHYSIOLOGY

Fundamental studies of microbial chemistry and growth. Composition of bacterial cells, energy metabolism, biosynthesis of macromolecules and macromolecule precursor materials, and regulatory mechanisms governing these events. Prerequisite, MICBIO 251 or permission of instructor.

#### 360 (I). MICROBIAL DIVERSITY

Physiology, ecology, and morphology of selected groups of microorganisms. Behavior of bacteria in response to environmental stimuli. Prerequisite, MICBIO 250. 2 class hours, 2 3-hour laboratory periods. Credit, 4.

#### 370 (I). MICROBIAL GENETICS I

Essentials of microbial genetics, molecular approaches including results from the recent important scientific literature. Example topics to be discussed are chromosome structure, mutation, plasmids and genetic engineering. Prerequisite, 1 course in either Microbiology or genetics. 3 1 hour lectures.

#### 371 (II). MICROBIAL GENETICS II (with lab)

Microbial genetics literature; basic concepts and laboratory procedures in experimental microbial genetics. Prerequisite, MICBIO 250 and permission of instructor. A general biochemistry course is recommended. 2 4-hour sessions twice a week, including lecture and laboratory. Credit, 4.

#### 385, 386 (I), (II). RESEARCH

Prerequisites, 8 credits of Microbiology and departmental permission. Credit, 1-6.

#### 391, 392 (I), (II). SEMINAR

Prerequisite, MICBIO 250. Credit, 1.

#### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Physics and Astronomy

**Head of Department:** Professor F.W. Byron, Jr. Professors Brehm, Button-Shafer, Cook, Engelsberg, Ford, Guyer, Harrison, Huguenin, Irvine, Jones, Krotkov, Peterson, Quinton, Rosen, Sternheim, Soltysik; Associate Professors Army, Dent, Gerace, Goldenberg, Golowich, Hallock, Hertzbach, Holstein, Kofler, Kreisler, Langley, Penchina, Pichanick, Rabin, Sastry, Swift, Taylor, Van Blerkom, Walker; Assistant Professors Chang, Crooker, Dakin, Hoffman, Kane, Mathieson, Scoville, Tademaru, Webb; Staff Associate Gray; Post Doctoral Research Associates and Lecturers Cuzzi, Finn, Telschow, Shah.

## PHYSICS

Introductory and advanced courses of many types designed for students with varied interests and needs are offered by the Department of Physics and Astronomy. Introductory level courses intended mainly for non-science majors are 100, 114, 115, 117, 118, 119, 121-122, 130, and 169. (114 is of special interest to Communication Disorders majors, 115 to music majors, and 130 to Elementary Education majors.) 141-142 serves the needs of life science majors, including premed-physics majors. 161-162-163 provides the necessary background for majors in Engineering, Chemistry, Physics, Astronomy, and other Physical Science fields. Students with special interest and facility in physics and mathematics, especially prospective Physics or Astronomy majors, are encouraged to elect the 170 series, the Honors version of the 160 sequence. Prospective majors sometimes elect to take 100 or 116 while completing the mathematics prerequisites for the introductory sequences.

In order to provide the maximum flexibility and diverse options, the department has recently revised all the upper division courses. This includes courses intended primarily for physics majors and those which also appeal to students in other scientific fields. The new curriculum has not yet received final University approval. Consequently all courses numbered 171 or higher are tentative, although substantial changes are not expected.

Majors are normally required to take MATH 131-132 and 165, a year of another science outside physics, and 18 credits of upper division physics courses: 220 or 222, 221 or 225, 223, 224 or 301, and two advanced laboratory courses chosen from 205, 320, 321, 322, 375, 376 (ASTRON 237 or 238 may be substituted for one of these labs). Physics students interested in interdisciplinary fields may elect to take additional courses in other departments, while those planning to continue in physics are encouraged to elect several advanced physics courses plus additional

math. Concentrations in biophysics and atmospheric physics are available.

### 100 (I), (II). PHYSICS FOR POETS: THE WORLD BEYOND OUR SENSES (E)

Physics of atoms and nuclei (quantum physics), of the universe (cosmology), and of high speeds (relativity). Designed for non-science majors and with a minimum of mathematics.

### 114 (I), (II). THEORY OF SOUND WITH APPLICATIONS IN SPEECH AND HEARING SCIENCE (E)

Fundamentals of wave motion; vibration of strings and membranes; sound waves; free and forced vibrations; transmission, reflection and absorption of sound. Applications to speech and hearing mechanisms. Designed as a prerequisite to COMSTU 287/587.

### 115 (II). PHYSICS OF MUSIC (E)

Elementary concepts of physics of sound in the production and reception of music. No previous physics training required; largely non-mathematical presentation. Emphasis on basic principles. Some historical perspective developed. Individual instruments discussed with demonstrations.

### 116 (I). RELATIVITY (E)

As much general physics material as is required for an understanding of the fundamental principles of relativity, and of their consequences in other fields. Intended for the general student. No background in physics or science required. Prerequisite, high school algebra.

### 117 (II). NUCLEAR ENERGY, ITS PHYSICS AND ITS SOCIAL CHALLENGE (E)

Basic physical concepts clarifying the nature of atoms and nuclei; the workings, capabilities and possible perils of nuclear reactors and explosives; associated social, political and diplomatic problems and challenges. Prerequisite, high school algebra.

### 118 (II). ELEMENTS OF QUANTUM PHYSICS (E)

Atoms and their structure, matter waves, duality, Pauli principle, spin, uncertainty principle, role of models in physics, application of concepts of quantum physics to solid state, nuclear and elementary particle physics, philosophical implications.

### 119. PHYSICS APPLIED TO CONTEMPORARY PROBLEMS (E)

Principles of physics applied to contemporary problems such as the energy crisis, air pollution, and the arms race. The scientific foundation for study of problems with social, political and economic implications.

### 121 (I), 122 (II). CONCEPTS OF PHYSICS (E)

Mechanics, sound, heat, electricity, light,

atomic and nuclear concepts. Conventional topics may be replaced to suit specific undergraduate majors, to emphasize historical, biological and conceptual rather than mathematical approaches. PHYSIC 121 prerequisite for PHYSIC 122. 2 class hours, 12-hour laboratory period. Credit, 3 each semester

### 123 (I), (II). PROBLEMS IN PHYSICS

Designed to fill gaps between courses such as 121-141, 141-161, etc. for students who have taken one general course and require a more advanced course tailored to the needs of individual students. Prerequisite, one general college physics course. Credit, 1-4

### 130 (I), (II). PHYSICS FOR ELEMENTARY EDUCATION MAJORS (E)

Physical phenomena and the schemes for their representation. Topics from mechanics electricity and magnetism, waves, optics and properties of matter. Mathematics at the level of algebra, trigonometry and simple geometry developed as required. For elementary education majors only. 2 class hours, 1 2-hour laboratory.

### 141 (I), (II), 142 (I), (II). INTRODUCTORY PHYSICS I, II (E)

Mechanics, sound, heat; electricity, magnetism, light and modern physics, using trigonometry and algebra, but not calculus. Intended for pre-medical, pre-dental, pre-veterinary, and other life science majors. Prerequisites, MATH 130 previously or concurrently for PHYSIC 141; PHYSIC 141 for PHYSIC 142. 4 class hours, 12-hour laboratory period alternate weeks. Credit, 4 each semester

### 161 (I), (II). GENERAL PHYSICS I (E)

Mechanics. For students primarily interested in engineering, chemistry, or mathematics. Prerequisites, MATH 131 or equivalent previously, or concurrently with special permission. Four class hours, 1 2-hour laboratory in alternate weeks. Credit, 4.

### 162 (I), (II). GENERAL PHYSICS II (E)

Heat, electricity, and magnetism. Prerequisites, MATH 131 or equivalent, PHYSIC 161; MATH 132 previously or concurrently. 4 class hours, 1 2-hour laboratory in alternate weeks. Credit, 4.

### 163 (I), (II). GENERAL PHYSICS III (E)

Electromagnetic radiation, optics, atomic and nuclear physics. Prerequisites, MATH 132; PHYSIC 162. 1 2-hour laboratory period. Credit, 4.

### 169. SCIENCE FOR READERS OF SCIENCE FICTION.

Space travel, faster than light drives, extraterrestrial life and intelligence, signals from space, etc., in the light of our present knowledge of astronomy, physics, chemistry, and biology. (Same as ASTRON 169.)



**171 (I), (II). HONORS GENERAL PHYSICS I (E)**

Particle dynamics, work and energy, conservation principles, rotational dynamics, oscillations, gravitation, elementary kinetic theory. Corequisite, MATH 131.

**172 (I), (II). HONORS GENERAL PHYSICS II (E)**

Electric fields, Gauss' Law, potential theory, capacitors and dielectrics, current and resistance, magnetic fields, Ampere's Law, Faraday's Law and induction, electromagnetic waves. Prerequisites, PHYSIC 141, 161, or 171. Corequisite, MATH 132.

**173 (I), (II). HONORS GENERAL PHYSICS III (E)**

Wave motion, particle nature of radiation-photoelectric effect, black body spectrum, X-ray production and scattering wave nature of particles — diffraction of particles, wave packets, uncertainty principle, elementary quantum mechanics and nuclear physics. Prerequisites, PHYSIC 142, 162, or 172, MATH 132.

**175 (I), (II). HONORS GENERAL PHYSICS LABORATORY I (E)**

Emphasis on data handling and error analysis. Corequisite, PHYSIC 171. Credit, 1.

**176 (I), (II). HONORS GENERAL PHYSICS LABORATORY II (E)**

An E and M lab with emphasis on DC circuits and instruments, some AC. Corequisite, PHYSIC 172. Credit, 1.

**177 (I), (II). HONORS GENERAL PHYSICS LABORATORY III (E)**

Modern physics with experience in electronics: oscilloscopes, precision meters, etc. Corequisite, PHYSIC 173. Credit, 1.

**185, 186. FRESHMAN COLLOQUIUM I, II (E)**

For freshmen (and in some cases sophomores) with a special interest in physics. Various topics in contemporary physics: lectures by physicists working in various research fields. Credit, 1.

**201. INTRODUCTION TO APPLIED PHYSICS**

Applications of basic principles of physics to such topics as acoustics, fluids, classical geometric optics and physical thermodynamics. With laboratory. Prerequisite, PHYSIC 142, 163, or 173. Credit, 4.

**202. TECHNIQUES OF THEORETICAL PHYSICS**

Free and forced, damped oscillations, impedance, wave equations and their solutions. Prerequisites, PHYSIC 142, 163, or 173.

**205. INTERMEDIATE LABORATORY**

Techniques applied in modern laboratories in

designing, constructing and using experimental apparatus. Specific laboratory skills will be developed in the course of performing physical measurements.

**220. PHYSICAL ELECTRONICS**

Basic ideas of electricity and magnetism. Emphasis on conceptual development. Topics include DC and AC circuits, electromagnetic field theory and Maxwell's equations, electron ballistics, electron microscopes, accelerators, magnetic mirrors. Prerequisite, PHYSIC 142, 162, or 172.

**221. CLASSICAL MECHANICS**

Motion of systems of particles and rigid bodies in three dimensions, gravitation, non-inertial coordinate systems, continuum mechanics, fluid dynamics, elementary Lagrangian theory, small oscillations and normal modes. Prerequisites, PHYSIC 141, 161, or 171, MATH 165.

**222. ELECTRICITY AND MAGNETISM (INTERMEDIATE)**

Static electric and magnetic fields, Maxwell's equations in matter, scalar and vector potentials, multipole expansions, electromagnetic induction, and circuit theory. Prerequisites, PHYSIC 142, 162, or 172, MATH 165.

**223. STATISTICAL PHYSICS AND THERMODYNAMICS**

Equilibrium thermodynamics, Maxwell relations, phase transitions, irreversible processes, Fermi and Bose gases, quantum liquids and solids, fluctuations. Prerequisites, PHYSIC 142, 163, 173, MATH 165.

**224. MODERN PHYSICS**

Special relativity, black body spectrum, Compton effect, photoelectric effect, nuclei and atoms, introductory quantum mechanics, molecules, binding energy and energy bands in solids, nuclear physics. Prerequisites, PHYSIC 142, 163, or 173, MATH 165.

**225 (I). BIOPHYSICS**

Techniques of biophysical measurements including X-ray structure determination, electron and optical microscopy, and molecular weight determination. Flow of energy and entropy considerations in biological systems. Electrical properties of cells, photosynthesis, vision and nerve conduction. Prerequisite, PHYSIC 142, 163, or 173.

**254 (I). METEOROLOGY.**

Theoretical treatment of various atmospheric phenomena with correlation of observation and theory. Weather observations, preparation of weather charts, and weather forecasting. Prerequisites, PHYSIC 142, 162, or 172, MATH 132.

**257 (II). ATMOSPHERIC PHYSICS**

The physics of processes occurring in the

earth's atmosphere. Topics include hydrostatic equilibrium of the atmosphere, gas laws, physics of clouds, atmospheric electricity and radiative transfer. (Listed also as ASTRON 257).

**301 (II). CONCEPTS OF MODERN PHYSICS I**

Fundamental concepts of twentieth century physics. Topics include kinetic theory, transport phenomena, shell structure of atoms, basic principles of quantum mechanics.

**302 (I). CONCEPTS OF MODERN PHYSICS II**

Continuation of PHYSIC 301. Topics include relativity, properties and structure of nuclei, nuclear reactions, new quantum numbers and families of elementary particles; aspects of space physics such as Van Allen radiation belts; properties of matter in the solid state. Prerequisite, PHYSIC 301.

**320 (II). RADIATION PHYSICS**

Physical principles of ionizing and non-ionizing radiations are discussed. The interactions of these radiations with matter (physical and biological) are considered. Applications of these as well as radioisotopes to nuclear medicine and other practical fields (such as the environment) are discussed. With laboratory. Credit, 4.

**321 (I), (II). ELECTRONICS INSTRUMENTATION FOR SCIENTISTS I**

Laboratory-oriented. Basic electronics principles, servo systems, operational amplifiers, digital circuits, other modern devices. Prerequisites, PHYSIC 142, 163, or 172. 2 class hours, 1 4-hour laboratory period. Credit, 4.

**322. ELECTRONICS INSTRUMENTATION FOR SCIENTISTS II**

Digital electronics. Two lectures, 1 2-hour laboratory weekly. Prerequisites, PHYSIC 321.

**351. APPLIED QUANTUM MECHANICS**

Applications of quantum principles to materials and the interaction of radiation with matter. Topics include electron nuclear interactions, nuclear magnetic resonance, masers, lasers, optical pumping, band theory of semiconductors, and superconductivity. Prerequisite, PHYSIC 224.

**352. ACOUSTICS**

Derivation of acoustical equations. Generation of sound; interpretation of forces and stresses as multipoles. Sound propagation: atmosphere acoustics, ray theory, refraction, absorption, scattering. Non ideal behavior: attenuation in porous materials, reverberation and decay of energy, coupled cavities. Prerequisite, PHYSIC 221.



### 353. OPTICS

Geometric optics and classical treatment of the interaction of radiation with matter. Light as a statistical process; correlation functions. Interference and spatial coherence. Fabry-Perot interferometers, Fourier transform spectroscopy, photodetectors, modern techniques of spectral analysis. Prerequisites, PHYSIC 222, 224.

### 354. PLASMA PHYSICS

The occurrence and generation of plasmas; applications to such problems as gas lasers, thermonuclear fusion and space charge effects. Collisional processes, motion of charged particles, adiabatic invariants, magnetic mirrors. Field equations and plasma oscillations. Prerequisites, PHYSIC 221, 222, 224.

### 355. HYDROMECHANICS

Introduction to theoretical fluid mechanics. Development of general equations of motion. Laminar and turbulent flow. Kinematics and dynamics of real fluids. Treatment of hydro-mechanic instabilities.

### 358. SOLID STATE PHYSICS

Introduction to theoretical and experimental physics of the solid state. Prerequisite, permission of instructor.

### 362. ELECTRICITY AND MAGNETISM (ADVANCED)

Description of electric and magnetic fields in a dynamical context. Electromagnetic radiation theory, optics, plasma physics, relativistic electrodynamics, cavity resonators, waveguides. Prerequisite, PHYSIC 222.

### 363. NON-EQUILIBRIUM STATISTICAL PHYSICS

Non-equilibrium statistical processes. Transport theory, the Boltzmann constant. Prerequisite, PHYSIC 223.

### 365. ADVANCED BIOPHYSICS

Selected topics in biophysics. Prerequisites, PHYSIC 225 or permission of instructor.

### 371. EXPERIMENTAL PHYSICS

A series of independent half semester modules. Modern laboratory practices in a given area such as vacuum techniques, computational techniques, low temperature, signals and noise, optics. Modules may include lectures and laboratories. Credit, 2.

### 375, 376. ADVANCED LABORATORY I, II

One or more elected experiments or an original research project. Laboratory work normally supervised by an individual faculty member on a one-on-one basis. Credit, 1-3.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

### 391. SEMINAR

An aspect of physics not usually covered in regular course offerings. Prerequisite, permission of instructor. Credit, 1-3.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

### ASTRONOMY (A Five College Department)

Chairman of Department: Professor William M. Irvine. Professors Harrison, Huguenin, Seitter, Strong; Associate Professors Arny, Dent, Taylor, Van Blerkom; Assistant Professors Dennis, C. Gordon, K. Gordon, Greenstein, Scoville, Tadamaru, White.

### 100 (I), (II). EXPLORING THE UNIVERSE (E)

Not open to Physical Science or Engineering majors. The earth, its structure and age, the moon, the sun, other planets and the origin of the solar system. Stars and galaxies, their birth and death. The universe, its structure and evolution. Supplemented by occasional hours of evening observation.

### 101 (I). THE SOLAR SYSTEM (E)

Earth, moon, tides, laws of motion, planets and satellites, the sun. Origin of the solar system and current theories of the origin of life. ASTRON 103 is an optional laboratory.

### 102 (II). STARS AND GALAXIES (E)

The astronomical universe. Astronomical instruments. Stellar distances and motions, star clusters, nebulae, pulsars, quasars. Evolution of stars and galaxies, cosmology. ASTRON 103 is an optional laboratory.

### 103 (I), (II). ASTRONOMICAL OBSERVATIONS

A laboratory and field course for those not majoring in physics and astronomy and preferably who are taking or have taken either ASTRON 100, 101, or 102. Telescopic observations, evening field trips, daytime field trips to the Five College Radio Observatory and Planetarium, and examination of astronomical photographs. Credit, 1.

### 105 (II). WEATHER AND OUR ATMOSPHERE (E)

An introduction to the earth's atmosphere, including weather forecasting, the origins of rainbows, sundogs, fog, inversions, halos, thunderstorms, and other common phenomena.

### 169 (II). (See PHYSIC 169). SCIENCE FOR READERS OF SCIENCE FICTION.

### 220 (II). COSMOLOGY (E)

Cosmological models and the relationship between models and observable parameters. Topics in current astronomy which bear upon cosmological problems, including background electromagnetic radiation, nucleosynthesis, dating methods, determinations of the mean density of the universe and the Hubble constant, and tests of gravitational theories. Questions concerning the foundations of cosmology, and its future as a science. Two 2-hour meetings. Prerequisites, one semester of calculus and one science course.

### 222 (I). INTRODUCTION TO ASTRONOMY (THE SOLAR SYSTEM AND STARS) (ASTFC 22)

For astronomy majors or others interested in a quantitative introductory course. Newtonian gravitation and the structure of the solar system; properties of the planets, meteors and comets; origin of the solar system; black-body radiation and stellar magnitudes; spectral lines and the spectral classification of stars; binary stars and stellar masses; nuclear energy and the structure and evolution of stars; the Hertzsprung-Russell diagram. 2 90-minute lectures per week plus evening laboratories. Prerequisites, PHYSIC 171 or 161 or 141, MATH 131 or permission of instructor.

### 223 (II). INTRODUCTION TO ASTRONOMY (GALACTIC AND EXTRAGALACTIC ASTRONOMY) (ASTFC 23)

For astronomy majors or others interested in a quantitative introductory course. Variable and exploding stars, pulsars, X-ray astronomy, the interstellar medium, galactic structure, external galaxies, quasars and cosmology. 2 90-minute lectures per week plus evening laboratories. Although ASTRON 223 may be taken before ASTRON 222, most students do not; those who do require some outside reading to orient themselves and should consult with instructor at the beginning of course. Prerequisites, same as 222. Credit, 4.

### 231 (I). SPACE SCIENCE: THE SOLAR SYSTEM. (ASTFC 31) (E)

Modern studies of the solar system. Emphasis on recent manned and unmanned missions undertaken by NASA and interpretation of results. Primarily for non-science majors. 2 90-minute lectures per week. Prerequisites, ASTRON 101-102 or 222 and MATH 111 or 131.

### 234 (II). DEVELOPMENT OF ASTRONOMY (ASTFC 34)

The progress of astronomy, traced from prehistoric petroglyphs to the space age. Emphasis on the development of important ideas in the field and the relation of astronomy to other cultural trends. Supplemented by occasional use of the planetarium and the departmental telescopes. Prerequisite, ASTRON 101-102 or 222.

**237 (I). ASTRONOMICAL OBSERVATION (ASTFC 37) (E)**

An introduction to the techniques of gathering and analyzing astronomical data. Subjects to be covered depend somewhat on individual interests: fundamental astronomical catalogues and their uses, photography, photometry, spectroscopy and classification of spectra, techniques of planetarium use, basic radio astronomy, introduction to telescope design and use, the astronomical distance scale. Three hours of classroom work per week, some of which will be observing sessions to be arranged. Prerequisite, ASTRON 101-102, or 222, or permission of instructor.

**238 (II). TECHNIQUES OF RADIO ASTRONOMY. (ASTFC 38) (E)**

Introduction to radio astronomy. Emphasis on practical techniques. The Five-College Quabbin Radio Astronomy Observatory is used to observe pulsars and other radio sources, and to perform flux density and interferometric position measurements. 2 90-minute lectures per week plus observing sessions.

**343 (I). ASTROPHYSICS I (ASTFC 43)**

Basic topics in astrophysics. Equilibrium configurations, and the physical state of stellar interiors. Polytrope models. Interaction of radiation and matter, and radiative transfer. Radiative and convective equilibrium. Study of opacity. Prerequisite, concurrent enrollment in Mechanics or permission of the department. 4 class hours. Credit, 4.

**344 (II). ASTROPHYSICS II (ASTFC 44)**

Interaction of matter and radiation. Radiative transfer. Introduction to the physics of stellar and planetary atmospheres. Plasma physics and cosmology. Prerequisite, ASTRON 343, or permission of the department. 4 class hours. Credit, 4.

**385 (I), (II); 386 (I), (II). SPECIAL PROBLEMS**

An individual research project approved by the department. Prerequisite, permission of the department. Credit, 1-6.

**398. SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

**399. SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Zoology

Chairman of Department: Professor John Palmer, Gilbert L. Woodside Professor of Zoology, Vincent Dethier; Professor Emeritus, Donald Fairbairn; Professors Bartlett, Honigberg, Moner, Nutting, Rauch, J. Roberts, L. Roberts, H. Rollason (Associate Chairman),

Sargent, Snedecor, Stuart; Associate Professors Andrews, Edwards, Kaulenas, Klingener, Levin, Ludlam, Mange, O'Connor, Potswald, G. Rollason, Snyder, Woodcock, Wyse; Assistant Professors Coombs, Kunkel, Noden, Novak, Searcy, White, Ziegler.

The Zoology Department offers a variety of general interest courses in ecology, behavior, natural history, genetics, and physiology constructed for the enjoyment and benefit of everyone; a few are designed to fulfill the needs of specific groups of students.

For students who decide to major in zoology, the curriculum provides the basic concepts in all areas of zoology, but allows for various individual interests. Zoology majors should complete ZOOL 240, Principles of Genetics; ZOOL 360, Cell Physiology; and one course from each of the following groups:

**Vertebrate Zoology:**

ZOOL 221, Comparative Anatomy  
ZOOL 223, Histology  
ZOOL 227, Embryology

**Invertebrate Zoology:**

ZOOL 281, Biology of the Invertebrates  
ZOOL 282, Biology of the Invertebrates  
ZOOL 283, General Parasitology

**Ecology, Population, Behavior:**

ZOOL 243, Population Biology  
ZOOL 335, Limnology  
ZOOL 337, Ecology  
ZOOL 350, Animal Behavior

**Physiology, Development:**

ZOOL 366, Vertebrate Physiology  
ZOOL 370, Comparative Physiology  
ZOOL 380, Developmental Biology

Background knowledge in allied fields aids understanding of zoological ideas; thus, additional requirements are:

BOTANY 100, Introductory Botany  
PHYSIC 141/142, Introductory Physics  
MATH 127/128, Calculus for the Life and Social Sciences.

Students contemplating a major in zoology should also enroll in CHEM 111 their first semester in order to anticipate those zoology courses which have general chemistry (CHEM 111/112), organic chemistry (CHEM 261/262 with laboratory), or biochemistry (BIOCHM 220 or 223) as prerequisites. No other scheduling difficulties should be encountered, although the student should, of course, plan ahead with regard to all prerequisites, and fall-versus-spring scheduling of some courses.

Students may substitute for MATH 127/128 either of the following sequences: STATIS 231/232, Fundamentals of Statistical Inference; or COINS 122, Introduction to Problem Solving, plus a second COINS course for which 122 is a prerequisite. Other substitutions are possible. For example, students with a strong interest in chemical biology may,

with the permission of the Chemistry Department, substitute CHEM 113/114 for CHEM 111/112; those with a special interest in physics may wish to substitute PHYSIC 161/162/163 for PHYSIC 141/142. The Bachelor of Science degree requires a total of 60 credits in natural science, mathematics, or psychology. A few courses elected from these areas will bring a zoology major's program to the 60-credit level.

ZOOL 101, Introductory Zoology, is currently not required of zoology majors, but the faculty is preparing a first course in zoology (ZOOL 102) for its majors which will be required. Any student who has not studied biology in high school or who feels the need for review may, of course, elect ZOOL 101, or simply audit the lectures.

The curriculum for those who plan to become certified secondary school biology teachers is somewhat broader. Additional botany courses (BOTANY 125 and 126), and several psychology and education courses, as well as practice teaching, provide the needed background. Also ZOOL 135, Introductory Physiology, may be substituted for the last group of zoology courses listed above. Students are urged to contact the Science Education advisor in the School of Education as early in their academic careers as possible since good course planning will expedite their very full programs. Written application to the teacher preparation program is required for student teaching placement.

The zoology faculty stands ready to assist the student in a variety of ways. Up-to-date information on course selection, the honors program for qualified students, special courses, individualized work (ZOOL 385/386), Senior Honors (ZOOL 398/399), and summer research opportunities is readily available from your advisor or other members of the faculty. It is useful to establish rapport with your advisor, and to seek as much information as possible about careers in zoology. Publications of the University and the College of Arts and Sciences Information and Advising Office (CASIAC) also provide information on procedures to ease your progress and on the vast array of courses to enrich your undergraduate education.

**101 (I), (II). INTRODUCTORY ZOOLOGY (E)**

Principles of zoology including cell structure and metabolism, heredity, development, behavior, evolution, ecology, and the anatomy and physiology of the major groups in the animal kingdom. Background for understanding current biological problems. 2 class hours. 1 3-hour laboratory.

**135 (I), (II). INTRODUCTORY PHYSIOLOGY (E)**

Circulation, respiration, digestion, metabolism, excretion, chemical and nervous coordination, muscular activity, and reproduction.



Prerequisite, ZOOL 101. 2 class hours, 1 3-hour laboratory.

### 137 (I), 138 (II). HUMAN ANATOMY AND PHYSIOLOGY

A systematic approach to the study of the human body with integration of structure and function. Primarily for students intending to study nursing; open to others with permission. Prerequisite, one semester of chemistry, preferably two; credit only for full-year course. 3 class hours, 1 3-hour laboratory.

Credit, 4 per semester.

### 145 (II). HUMAN GENETICS (E)

Introduction to human genetics emphasizing principles applicable to all species, specific knowledge of man, and scientific methodology. Topics include chromosomal and biochemical variations, blood groups, linkage, hypothesis testing, and gene frequency changes in populations. Not open to students majoring in biological sciences. Prerequisite, ZOOL 101.

### 150 (I). BIOLOGY OF BEHAVIOR (E)

The biological approach to the study of animal behavior. Historical, descriptive, physiological, and evolutionary aspects; the relationships of animal behavior studies to the understanding of human behavior. Not for major credit. Prerequisite, one semester of biological science.

### 161 (I). BIOLOGY OF BIRDS (E)

Selected topics in avian biology; birds' migrations and navigational capabilities; breeding behavior; structural and functional specializations; origin and evolution; ecology, economics, and aesthetic relations to man. Prerequisite, one semester of biological science.

### 176 (I), (II). ECOLOGY OF MAN (E)

Man's interaction with the physical, chemical, and biological environment. Problems of population, food supply, pollution, resources, and human behavior, in relation to ecological theory. Not open to students majoring in biological sciences. Prerequisite, 1 laboratory course in biological science.

### 200 (II). NATURAL HISTORY (E)

Basic features of the solar system, earth structure, climate, and living organisms of concern to the neophyte ecologist field biologist, and primary or secondary school teacher. Many field trips. Prerequisite, one semester of biology. 1 class hour, 1 4-hour laboratory.

### 221 (I), (II). COMPARATIVE VERTEBRATE ANATOMY

Structure and phylogeny of vertebrates. Laboratory work illustrates evolutionary trends and specializations and provides experience in dissection. Prerequisite, ZOOL 101 or 240. 2 class hours. 1 3-hour laboratory.

### 222 (II). VERTEBRATE FOSSILS AND EVOLUTION

Introduction to vertebrate history emphasizing fossil forms: changes in locomotory, feeding, and defense structures, nature of transitions between groups, stratigraphic uses of vertebrate fossils, and modes of life of extinct animals. Illustrated by museum specimens. Prerequisites, one semester of zoology, geology, or physical anthropology.

### 223 (I), (II). HISTOLOGY

Structure of cells, tissues, and organs as related to function; emphasis on the mammal; introduction to microtechnique. Prerequisite, ZOOL 101 or 240. 2 class hours, 1 ZOOL 3-hour laboratory.

### 227 (II). EMBRYOLOGY

A survey of embryonic development from a combined descriptive, comparative, and analytical point of view. Laboratories deal with descriptive and comparative phases of ontogeny, especially of amphibia, birds, and mammals. 2 class hours. 1 3-hour laboratory. Prerequisite, ZOOL 101 or 240.

### 230 (I). SYSTEMS OF THE HUMAN BODY

Lectures present a detailed and integrated study of human anatomy and physiology. Laboratories deal with functional properties of the human organism and are supplemented by exercises in gross anatomy of the cat and rat. Designed for students in Medical Technology and Public Health; others must have instructor's permission. Prerequisites, CHEM 112, ZOOL 101. 3 class hours, 1 3-hour laboratory.

Credit, 4.

### 240 (I), (II). PRINCIPLES OF GENETICS

(Same as BOTANY 240). Mechanisms of heredity in plants and animals, emphasizing transmission and action of genes, population genetics, and evolution. Not open to students who have passed ZOOL 145. Prerequisites, CHEM 111, one semester of Biological science.

### 243 (II). INTRODUCTORY POPULATION BIOLOGY

An evolutionary and integrated introduction to the demographic, ecological, genetic, and geographic aspects of the biology of populations. Consideration of social implications and utility. Background in probability theory, statistics, and mathematical and numerical modelling. Prerequisites, ZOOL 145 or 240 or equivalent, and 1 semester of mathematics. 2 class hours and 1 2-hour period for discussion and problem solving.

### 275 (II). BIOLOGY OF PROTOZOA

Morphology and physiology of protozoa, with emphasis on contributions made to basic problems of biology through study of these organisms. Prerequisites, ZOOL 101 or 240, 2 additional laboratory courses in biological sciences, CHEM 262. 1 class hour, 1 2-hour and 1 3-hour laboratory.

### 281 (I), 282 (I), (II). BIOLOGY OF THE INVERTEBRATES

Ecology, physiology, development and phylogeny of invertebrate animals. Protozoa, Cnidaria, Platyhelminthes, Nematoda, Mollusca, etc. covered in 281; Annelida, Arthropoda, Echinodermata, etc. covered in 282. Either course may be elected independently. Prerequisite, ZOOL 101 or 240. 2 class hours, 1 3-hour laboratory.

### 283 (I). GENERAL PARASITOLOGY

Morphology, life cycles and physiology of protozoan and helminth parasites, with emphasis on broad aspects of parasitism. Prerequisites, ZOOL 101 or 240, CHEM 112 or 114. 2 class hours, 1 3-hour laboratory.

### 285, 286 (I), (II). TOPICS IN ZOOLOGY

Occasional offerings on a variety of zoological topics. Consult the department for current offerings.

Credit, 1-6.

### 300 (I). VERTEBRATE ZOOLOGY

Morphology and biology of recent vertebrates with emphasis on freshwater fishes, amphibians and reptiles. Laboratories combine descriptive and analytical summaries of the major groups represented in North American fauna. Prerequisites, ZOOL 101 and 240. 1 class hour, 2 2-hour laboratories.

### 302 (II). ICHTHYOLOGY

Structure and function of fishes, particularly marine teleosts and cartilaginous species; aspects of development, distribution, and adaptations to aquatic habitats. Laboratories consider anatomy, diversity, and biological bases for classification of principal taxa. Prerequisite, ZOOL 221 or 300. 2 class hours. 1 3-hour laboratory.

### 306 (II). ORNITHOLOGY

An introduction to avian biology for majors in the biological sciences. Emphasis on structure, function, classification, and behavior. Prerequisite, ZOOL 221 (preferred) or 300. 2 class hours, 1 3-hour laboratory.

### 308 (II). MAMMALOLOGY

Evolution, distribution, classification and ecology of mammals. Laboratory includes field trips, preparation of study material, and identification of local fauna. Prerequisite, ZOOL 221 or 300. 2 class hours, 1 3-hour laboratory.

### 335 (II). LIMNOLOGY

The physical and chemical properties of inland waters and the relationships between these properties and the biota. Models of nutrient cycles are used to quantify these relationships. Prerequisites, CHEM 112 and Junior standing. 2 class hours, 1 3-hour laboratory.

### 337 (I). ECOLOGY

Introduction to descriptive and theoretical ecosystems, community, population, and



## Social and Behavioral Sciences

behavioral ecology. The laboratory emphasizes ecologic principles and techniques. Prerequisites, ZOOL 101 or 240, MATH 128, one semester of invertebrate zoology, preferably ZOOL 282. 2 class hours, 1 3-hour laboratory.

### 350 (I). ANIMAL BEHAVIOR

The biological bases of animal behavior. Analysis of the methods and objectives of current research. Prerequisite, ZOOL 101 or 240, and PSYCH 101 or 250.

### 360 (I), (II). CELL PHYSIOLOGY

Modern trends in physiology with emphasis on chemical and physical properties of cells including cell ultrastructure and metabolism, permeability, muscle contraction and molecular biology. BIOCHM 220 or 223. 2 class hours, 1 3-hour laboratory.

### 366 (I). VERTEBRATE PHYSIOLOGY

Function of organs and organ systems in vertebrates. Not open to students who have passed ZOOL 135. Prerequisite, ZOOL 360 or BIOCHM 220 or 222 or 223. 2 class hours, 1 3-hour laboratory.

### 370 (II). COMPARATIVE PHYSIOLOGY

Physiological principles involved in adaptations of animals to their environment; laboratory emphasis on experimental methods used to study adaptive mechanisms. Prerequisite, ZOOL 360. 2 class hours, 1 3-hour laboratory.

### 380 (I), (II). DEVELOPMENTAL BIOLOGY

Physiological and biochemical aspects of development. Laboratory includes seminars, discussions, and experimental work. Prerequisites, BIOCHM 222 or 223, ZOOL 360. 2 class hours, 1 3-hour laboratory.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

Note: Summer courses such as Invertebrate Zoology, Invertebrate Embryology, and Marine Ecology taken at the Marine Biological Laboratory, Woods Hole, Massachusetts or study at the University's Nantucket Island Field Station or other biological field stations will be awarded 3 to 6 credits upon certification of satisfactory achievement in 6 to 12 weeks of study.

## Anthropology

Chairman of Department: Associate Professor Donald A. Proulx. Professors Fraser, Halpern, Pi-Sunyer, Salzmann and Woodbury; Associate Professors Armelagos, Cole, Hudson and Munn; Assistant Professors Dincauze, Faulkingham, Forman, Fortier, Morbeck and Wobst; Visiting Associate Professor Thomas; Visiting Assistant Professor Swedlund.

Anthropology majors must take ANTH 104 and one other of the following introductory courses: 102, 103, or 105. They should also take at least one other course in the social and behavioral sciences (either Sociology, Economics, Political Science or Psychology.) All majors must elect a minimum of 30 credits in Anthropology, with at least 21 of these credits chosen from courses above the 100 level. The maximum acceptable credits in Anthropology is 45. Students choosing Anthropology as a major are also required to take a course in quantitative methods selected from a list available from the department. Under special circumstances, and with the advisor's approval, an Anthropology major may be allowed to substitute as part of the departmental requirements non-duplicating Anthropology courses given at another of the Five-College Cooperative institutions. Transfer students must take a minimum of 15 credits of their Anthropology requirement from our department.

### 102. INTRODUCTION TO ARCHAEOLOGY (D)

The history, methods and theory of archaeology, with an outline of the main characteristics of the prehistoric record throughout the world. 2 lecture meetings, 1 discussion and/or demonstration section.

### 103. INTRODUCTION TO PHYSICAL ANTHROPOLOGY

Human evolution, human variation, racial classifications, racism, and modern theories of variation.

### 104. INTRODUCTION TO CULTURAL ANTHROPOLOGY (D)

Social and cultural anthropology dealing with variations among societies in technology and economics, social and political organization, art, religion, and ideology.

### 105. INTRODUCTION TO LINGUISTIC ANTHROPOLOGY

Survey of the role and contributions of linguistics in anthropology. Biological foundations of language; the process of communication; language structure; linguistic ontogeny, phylogeny, and prehistory; the principle of linguistic reality; and other topics.

### 204. THE ORIGINS OF ANCIENT CIVILIZATIONS (D)

A critical analysis of the archaeological data

and theories pertaining to the origins and rise of civilizations in the Old World and the New. Prerequisite, ANTH 102 recommended.

### 220. RESEARCH TECHNIQUES IN PHYSICAL ANTHROPOLOGY; SKELETAL ANALYSIS

Methods for excavating and analyzing human skeletal material with emphasis on sexing and aging techniques. Problems of growth and development and in pathology. 2 2-hour labs.

### 228. IMAGES OF U.S. INDIANS

Some of the ways in which U.S. Indians have been perceived by social scientists, federal and other officials, "do-gooders" and novelists, from the 18th to the 20th centuries. Students expected to read extensively in areas of their personal choice; books to be selected from a long bibliography. No prerequisites; open to non-majors.

### 234. PRIMITIVE ART

A survey of the cultural and aesthetic aspects of the visual arts of primitive societies in sub-Saharan Africa, Oceania, and North America. Emphasis on the function and meaning of art in society.

### 236. ARCHEOLOGY OF MESOAMERICA

The growth of civilization in Mexico and Central America from its earliest antecedents to the Spanish Conquest, based on archeological research. Prerequisite: ANTH 102 or permission of instructor.

### 238. CULTURE AND SOCIETY IN MESOAMERICA

The Mesoamerican culture area from the Spanish Conquest to the present day. Traces the evolution of contemporary Mesoamerican cultures and examines the nature of Mesoamerican pluralism and socio-cultural integration.

### 252. RURAL AND PEASANT SOCIETIES (D)

Rural and peasant societies from the standpoint of their population and institutions, their emerging needs, and their relation to mass society. Prerequisite, SOCIOL 101 or ANTH 104

### 255. PRE-INDUSTRIAL TECHNOLOGY

Analysis of selected aspects of the material culture of simpler societies, both past and present, in relation to social and economic aspects of culture. Prerequisite, ANTH 102 or 104.

### 260. PEOPLES OF EUROPE: EASTERN EUROPE AND THE U.S.S.R. (D)

A survey of the peoples and cultures of Eastern Europe; emphasis on the Slavic peoples as well as upon those cultures transitional between Europe, the Middle East and Asia from their prehistoric origins to the period of their modernization, stressing the role of peas-

antries and nomads with their changing ecological adaptations. Prerequisite, ANTH 104.

**261. PEOPLES OF EUROPE: THE WESTERN MEDITERRANEAN (D)**

A survey of the peoples and cultures of Mediterranean Western Europe. Emphasis on the historical span from the crystallization of distinct national cultures to the present.

**263. URBAN ANTHROPOLOGY**

Using as a point of departure the current urban condition, the origins and evolution of cities are explored in a cross-cultural framework. Emphasis on the nature of rural-urban relationships and how these have changed over time.

**265. PEOPLES OF EUROPE: CENTRAL EUROPE (D)**

Anthropologically oriented examination of the culture of Central Europe, with particular emphasis on Czech culture: geographic, historical and demographic background; survey of folk culture and folklore; languages and beginnings of literary tradition; major developments in this century. Prerequisite, permission of instructor.

**267. PEOPLES OF EUROPE: ALPINE EUROPE**

Analysis of Alpine cultures from prehistoric through contemporary times. Cultural adaptation to environmental variation in mountainous zones and the interrelationship of mountain and low-land communities.

**269. CULTURES OF AUSTRALIA AND NEW GUINEA (D)**

The ethnography of aboriginal Australia and New Guinea with emphasis on the particular problems of theory and analysis that have concerned anthropologists studying these areas. Prerequisite, ANTH 104.

**270. CARIBBEAN CULTURES**

An ethnographic survey of the societies of the Greater and Lesser Antilles, emphasizing the interaction of European colonial and African cultures both historically and in respect to present economic and political problems.

**315. PRIMATE ANATOMY**

Structure and phylogeny of primates (prosimian, monkey and ape) with emphasis on evolutionary trends leading to man. Laboratory work provides experience in dissection. Prerequisites, ANTH 103, ZOOL 101 or equivalent. 2 class hours, 1 -3 hour laboratory period.

**316. PRIMATE EVOLUTION**

Survey of primate evolution, including the evolutionary history of the prosimians, monkeys, apes and man, with emphasis on the diversification of apes and the origin of man.

**317. PRIMATE BEHAVIOR**

Emphasizes the adaptive behavioral complexes in field and laboratory studies of the four living grades of primates: prosimians, monkeys, apes and man. Special aggression, etc., considered.

**320. ECONOMIC ANTHROPOLOGY**

Surveys the patterns of production, distribution and consumption in traditional societies as well as the social and political matrices of these patterns. Alternative theoretical approaches to selected problems in economic anthropology.

**321. PREHISTORIC CULTURAL ECOLOGY**

Analysis of cultural ecological approaches to the interpretation of the prehistoric record. Prerequisite, permission of instructor.

**325. THE ANALYSIS OF MATERIAL CULTURE OF THE HISTORIC PERIOD**

The methods and techniques of analysis of temporal and spatial distributions, technology, and spatial interrelationships of several forms of material culture. Special attention to the relationships between material and non-material culture. Emphasis on historic period materials, but some prehistoric data is included. Recent contributions of ethnoarchaeologists.

**330. SOCIAL ORGANIZATION OF IMPERIALISM**

Analysis of the varieties of social relations between industrial societies and non-industrial areas of the world. Special attention to the development of Western imperialism on Africa, Asia and the Western Hemisphere and to the patterns of resistance, accommodation and rebellion that have developed in response.

**333. KINSHIP AND SOCIAL ORGANIZATION**

Designed to acquaint the student with basic conceptual tools and problems in this field. Principles of social organization such as kinship, descent, ranking, etc., examined with reference to individual societies and general theory.

**335. NATIVE AMERICAN LANGUAGES**

A survey of American Indian languages, primarily north of Mexico, Genetic classifications and Sapir's classification based on structural resemblances between language families. Type of linguistic structure and structural restatements. Comparative work and reconstructions. Prerequisite, ANTH 105 or permission of instructor.

**336. POLITICAL ANTHROPOLOGY (D)**

Anthropological approaches to the study of politics in representative bands, tribes, and states, Evaluation of several analytic stances

through reading and discussing relevant political anthropological literature.

**338. ANTHROPOLOGY OF LAW AND CONFLICT (D)**

A comparative cross-cultural analysis of judicial institutions, socio-cultural sources and patterns of conflict and conflict resolutions, and the social functions of law and of legal institutions.

**340. RELIGION AND RITUAL (D)**

Classical problems in the anthropology of religion from Durkheim and Tylor to Evans-Pritchard, Levi-Strauss and Lloyd Warner. Special attention to the analysis of ritual. Prerequisite, ANTH 104 or permission of instructor.

**354. JUDAIC ETHNIC GROUPS: A CROSS-CULTURAL PERSPECTIVE**

An ethnographic survey of Judaic ethnic groups, mainly since the 18th century. Concerned mainly with groups, in Eastern Europe, Israel, North America and to a lesser extent Western Europe, North Africa and Asia. Stress on changing patterns of ethnic identity and the interaction between religious tradition and culture change.

**360. LANGUAGE IN CULTURE AND SOCIETY**

The relationship between language and culture and between language varieties and social structure. Prerequisite, ANTH 105 or permission of instructor.

**362. ORAL FOLKLORE IN NONLITERATE SOCIETIES**

Introduction to the ethnography of oral folklore. Topical emphasis on the analysis and function of tales; geographic analysis of Africa and North America.

**363. LINGUISTIC ANTHROPOLOGY: COMPARATIVE DIMENSION**

The methods and interpretations of comparative linguistic analysis in the field of anthropology. Prerequisite, ANTH 105 or permission of instructor.

**364. PROBLEMS IN ANTHROPOLOGY (D)**

Examination of selected problems in physical anthropology, archaeology, social and cultural anthropology. Illustrative material drawn from both nonliterate and peasant societies. Prerequisite, ANTH 104 or permission of instructor.

**365. WORLD ETHNOGRAPHY (D)**

Selected societies of Africa, the Americas, Asia and Oceania. Problems of comparing societies, especially with regard to their environmental contexts and levels of productivity. Prerequisite, ANTH 104 or permission of instructor.



**366. THE INDIVIDUAL AND SOCIETY (D)**  
Selected approaches to the interrelations of individual behavior and social patterns, with consideration of data on "Western" and "non-Western" societies. Prerequisite, ANTH 104 or permission of instructor.

**367. CULTURES OF AFRICA (D)**  
An extensive survey of the cultures of Africa, a comparison of their social, political, religious, and economic patterns, and toward consideration of the evolution and interrelationship of the cultures of the area. Prerequisite, ANTH 104 or permission of instructor.

**368. OLD WORLD PREHISTORY (D)**  
A survey of the prehistoric cultures of Europe, Asia, and Africa, with emphasis on the Paleolithic, Neolithic and early metal-using periods. Designed to give an understanding of the significant cultural developments in the Old World before the emergence of historic civilizations.

**369. NORTH AMERICAN ARCHAEOLOGY (D)**  
An intensive survey of American Indian prehistory north or Mexico. Emphasizes the historical development processes in selected geographical regions. Prerequisite, ANTH 102.

**370. NORTH AMERICAN INDIANS (D)**  
Indian tribes with various levels of technological development and social complexity, from areas north of Mexico, in terms of their environmental context and the impact of non-Indian societies on their cultures. Prerequisite, ANTH 104.

**371. HUMAN EVOLUTION**  
The mechanisms of evolutionary change, the fossil and archaeological evidence bearing on man's evolution, and an evaluation of the various interpretations of the evidence. Prerequisite, ANTH 103.

**372. HUMAN VARIATION**  
Description and analysis of qualitative and quantitative biological variation in and between human populations. Prerequisites, a course in Genetics (ZOOL 145 or 240) and an elementary course in statistics. ANTH 103, 371 recommended.

**373. CULTURES OF SOUTHEAST ASIA (D)**  
An introduction to the history and ethnography of the native cultures of Southeast Asia, including consideration of the peasant populations and their expanding role in the development of modern Southeast Asian states. Prerequisite, ANTH 104 or permission of instructor.

**374. CULTURES OF THE FAR EAST (D)**  
A survey of culture-history and ethnography of representative people of East Asia; peasant sub-cultures of traditional contemporary

China, Japan, and Korea. Prerequisite, ANTH 104 or permission of instructor.

**375. SOUTH AMERICAN ARCHAEOLOGY (D)**  
A survey of the pre-Columbian cultures of South America and their development, with emphasis on the Andean areas.

**376. SOUTH AMERICAN ETHNOLOGY (D)**  
An analysis of the colonial and contemporary cultures of South America with emphasis on Indian tribes. The interrelationship of Indian, European and Negro societies and their contributions stressed. Prerequisite, ANTH 104 or permission of instructor.

**377. SUMMER FIELD SCHOOL IN ARCHAEOLOGY**  
Practical experience and training in archaeology. Both prehistoric and colonial sites are excavated, and instruction given in archaeological methods and techniques. Prerequisite, ANTH 102 or equivalent and permission of instructor. Credit, 6.

**378. THEORY AND METHOD IN ARCHAEOLOGY (D)**  
An intensive examination into the scientific approach to modern archaeological research and the utilization of this approach for deriving and testing theories of prehistory and human behavioral patterns. Prerequisite, ANTH 102 or permission of instructor.

**379. CULTURAL DYNAMICS AND APPLIED ANTHROPOLOGY (D)**  
Theories of cultural process and their application to practical cross-cultural situations in administration, technical assistance and community development. Prerequisite, ANTH 104 or permission of instructor.

**380. FIELD COURSE IN CULTURAL ANTHROPOLOGY**  
A summer course affording the advanced undergraduate or graduate student supervised training in cultural anthropological research. Location varies from year to year. Prerequisites, advanced course work in Anthropology and permission of instructor. Credit, 6.

**381. QUANTITATIVE METHODS IN ANTHROPOLOGY**  
The interpretation and analysis of data from all fields of anthropology. Descriptive statistics, formulation and testing of hypotheses, correlation and regression. Discussion of current trends in the methodology of anthropological research.

**382. HISTORY OF ARCHAEOLOGY**  
Events, major sites, and men important in the development of archaeology during the 19th and 20th centuries. Theoretical and technical advances related to the present state of

archaeology emphasized. Prerequisite, ANTH 102 and permission of instructor.

**385, 386. SPECIAL PROBLEMS**  
Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

**388, 389. READINGS IN ANTHROPOLOGY**  
Credit, 1-3

**398. SENIOR HONORS**  
Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4

**399. SENIOR HONORS**  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Economics

*Chairman of Department:* Associate Professor Norman Aitken. Professors Barkin, Bowles, Holesovsky, Howard, Katzner, Kindahl, Morris, Rapping, Resnick, Rottenberg; Associate Professors Blackman, Cox, Gale, Gintis, Ray, Treyz, Wolff; Assistant Professors Best, Burghardt, Crotty, Duston, Edwards, Feltenstein, Humphries, Oaxaca, Tsao, Wright; Instructor Gordon.

Students planning to take one or two economics courses normally choose courses with numbers in the 100s. Those students who plan to take several economics courses normally take ECON 103 and then take courses in the 200s or 300s for which this is the required prerequisite.

Economics majors must take ECON 103, 104, 203, 204 and at least 12 additional credits of upper level courses (205 and above), other than special studies, seminar and independent study courses. All majors are required to pass one semester course in calculus from among MATH 127, 131, or 132 or the two semester sequence MATH 120, 121, Mathematics for Business Students. Normally economics majors do not take more than two courses with numbers in the 100's and only if a 100 course other than ECON 100, 103, 104 was taken before becoming an Economics major. In no case may more than three 100 courses be credited toward the major. Students who have taken ECON 100 may be given a waiver from ECON 103 or 104 on approval of the instructor and the Director of Undergraduate Studies. Students contemplating graduate study in economics or business administration are advised to take mathematics at least through two semesters of introductory calculus, linear algebra (MATH 167) and two semesters of statistics (preferably STATIS 231 and ECON 252).

With the exception of ECON 103 and 104, declared Economics majors may not elect any



Economics Department course on a pass/fail basis, nor may the required credits in mathematics be elected on a pass/fail basis. Students who become economics majors after previously passing one or more upper-division economics courses on a pass/fail basis must offer at least six graded upper-division economics courses (18 credits) for graduation.

#### On Honors

The Economics Department offers a wide range of Honors courses. ECON 103 and 104 have Honors sections each term. ECON 203 (I) and 204 (II), 251 (I) and 252 (II), are also offered with Honors sections. Check the course description guide for specific instructions regarding Honors registration each term.

Information about the study of Economics may be obtained by calling 545-0855 or visiting Thompson 1032.

#### 100 (I), (II). ELEMENTS OF ECONOMICS (D)

A one-semester introduction to economics. The elements of the discipline; how the economy is structured and how it functions.

#### 103 (I), (II). INTRODUCTION TO MICROECONOMICS (D)

Introductory analysis of resource allocation and income distribution through microeconomic theory. Specific problems illustrate the use of the theoretical precepts developed.

#### 104 (I), (II). INTRODUCTION TO MACROECONOMICS (D)

Theory of the behavior of the American economy. Emphasis on the goals of full employment, price stability, economic growth and balance of payments equilibrium.

#### 121 (I), (II). THE INTERNATIONAL ECONOMY (D)

An historical and analytical introduction to international institutions, trade, finance and policy. Current problems and recent developments treated extensively.

#### 131 (I), (II). THE ECONOMICS OF INSECURITY AND POVERTY (D)

Public and private programs to prevent or alleviate economic insecurity, including poverty, substandard incomes and economic contingencies.

#### 141 (I), (II). LABOR PROBLEMS (D)

Background of the labor movement and problems involved in the management-labor relationship and the efforts of management, unions and government to solve them.

#### 172 (I), (II). THE SOVIET ECONOMY (D)

Resource allocation through centralized planning in the Soviet economic system. A case history of economic development. Current problems of economic reform.

#### 181 (I), (II). ECONOMICS AND URBAN PROBLEMS (D)

The structure of the urban economy; goals, processes, problems, and policy in urban economic development.

#### 191, 192, (I), (II). SEMINAR FOR INTRODUCTORY STUDENTS (D)

A special topic, depending on appropriate staff and department approval, on petition of 15 students or recommendation by a faculty member.

#### 203 (I), (II). INTERMEDIATE MICROECONOMIC THEORY (D)

Microeconomic analysis of consumers, firms, industries, and markets; rational decision-making under conditions of certainty; balancing forces in a free enterprise economy. Prerequisite, ECON 103.

#### 204 (I), (II). INTERMEDIATE MACROECONOMIC THEORY (D)

Formulation and empirical testing of static and dynamic theories of aggregative income, employment, and prices with reference to fluctuations, growth, and economic forecasting. Prerequisite, ECON 103 and 104.

#### 205 (II). MARXIAN ECONOMICS (D)

Exposition of the Marxian economic theory in modern idiom. Comparison of methodological assumptions and conceptualization of economic phenomena in Marx and in "mainstream economics." Prerequisites, ECON 103 and 104.

#### 211 (I), (II). MONEY AND BANKING (D)

The development and operation of the monetary and banking systems of the United States; problems of achieving full employment and price stability through monetary controls. Prerequisite, ECON 104.

#### 231 (I), (II). SOCIAL CONTROL OF BUSINESS (D)

The formal and informal methods and efforts to maintain, supplement and moderate competition, and the substitution of regulation and public enterprises for competition. Prerequisite, ECON 103.

#### 232 (I), (II). THE STRUCTURE OF AMERICAN INDUSTRY (D)

Business enterprise, market competition, and economic development in American industries. The social effectiveness of industries analyzed through measures of industrial structure and market performance. Prerequisite, ECON 103 recommended, 203.

#### 242 (II). LABOR LAW AND LEGISLATION (D)

Economic effects and historical survey of Federal and state laws and an analysis of important court decisions. Prerequisites, ECON 141, or permission of instructor.

#### 251 (I). MATHEMATICAL METHODS IN ECONOMICS

The applications of various mathematical concepts and techniques in macroeconomic and microeconomic analysis. Emphasis on the design and interpretation of mathematical models of economic phenomena. Prerequisites, ECON 103, MATH 127, 135, or permission of instructor.

#### 252 (II). ECONOMETRICS

The application of mathematical and statistical methods to economic theory, applied to both microeconomic and macroeconomic policy issues. Prerequisite, permission of instructor.

#### 261 (I). EUROPEAN ECONOMIC EVOLUTION (D)

Evolution of economic organization in agriculture, industry and commerce; the surrounding social and institutional life. Prerequisites, HIST 100 and 101, or an economics course.

#### 262 (II). AMERICAN ECONOMIC HISTORY (D)

An analytical approach to structural change, economic growth, and the development of market institutions in the United States from colonial times to the present. Prerequisite, ECON 100 or 103.

#### 266 (I). ECONOMIC DEVELOPMENT (D)

Economic problems of underdeveloped countries and the policies necessary to induce growth. Individual projects required. Prerequisite, ECON 100 or 103 or 104.

#### 267 (II). LATIN AMERICAN ECONOMIC DEVELOPMENT (D)

The economic systems of Latin America. Emphasis on the structural problems of export oriented economies and a historical comparison of development strategies. Prerequisite, ECON 266 or permission of instructor.

#### 270 (I), (II). ECONOMICS OF SOVIET PLANNING (D)

Lessons of Soviet development strategy and central administrative planning for countries in search of models. Economic imperialism and foreign transactions in the context of East-West relations. Prerequisite, ECON 103.

#### 271 (I). COMPARATIVE ECONOMIC SYSTEMS (D)

Evaluation of the performance of alternative economic systems in theory and practice. Problems of planning in the advanced economies of the United States, Western Europe, and Soviet area. Prerequisite, ECON 103.

#### 281 (I). REGIONAL ECONOMICS (D)

The process of regional economic growth; location theory and basic techniques of regional analysis; public and private area development programs. Prerequisite, ECON 103 recommended.

**285 (I). ECONOMICS OF EVALUATION**  
An introduction to the methodologies used by economists in evaluating the impact of government programs and legislation. Prerequisite, ECON 103.

**306 (I). DEVELOPMENT OF ECONOMIC THOUGHT (D)**  
The evolution of contemporary theory from its classical beginnings; neoclassicism and its chief variants; dissenters Marx, German historical school, Veblen. Emphasis on relation of economic thought to other kinds of social theories. Prerequisite, ECON 103.

**312 (I). PUBLIC FINANCE (D)**  
Principles of public revenues and expenditures; systems and problems of taxation; use of taxes, expenditures, debt policy to provide full employment; economic growth and price stability. Prerequisites, ECON 103 and 104.

**314 (II). STATE AND LOCAL PUBLIC FINANCE (D)**  
State and local government revenue and expenditure programs. Individual research projects relating to Massachusetts or surrounding states required. Prerequisite, ECON 100 or 103.

**321 (II). INTERNATIONAL MONETARY THEORY AND POLICY (D)**  
Explanations of the causes and consequences of international flows of products, capital and labor, emphasis on monetary categories including the balance of payments and adjustment mechanisms. Prerequisite, ECON 103, 104, or 204.

**322 (II). INTERNATIONAL TRADE AND ECONOMIC POLICY (D)**  
Intermediate theory of international trade, including the analysis of the balance of payments mechanism, pure non-monetary theory and its application to problems of commercial policy. Prerequisites, ECON 203 and 321.

**338 (II). ECONOMICS OF HEALTH (D)**  
Application of economic theory to resource allocation in the health services industry. Survey of performance of this industry as measured by costs and various health indices. Market failure in health care. Alternative delivery systems. Prerequisite, permission of instructor.

**345 (II). HUMAN RESOURCE ECONOMICS (D)**  
Analysis of private and social means for providing access to higher education, medical care and an improved environment. Barriers to the achievement of these ends. Priorities in human resource policy. Prerequisite, ECON 103.

**347 (I). ECONOMICS OF THE LABOR MARKET (D)**  
Microeconomic analysis applied to the conceptualization of labor market phenomena. Topics include labor supply, human capital, wage structure, and unemployment. Introduction to labor market data and empirical analysis. Prerequisite, ECON 203.

**372 (I). NATIONAL ECONOMIC POLICIES OF ADVANCED EUROPEAN COUNTRIES AND PROGRAMS**  
Evaluation of economic policy and decision-making mechanisms in the United States, Norway, Sweden, Netherlands, United Kingdom and Canada and other advanced non-socialist countries students may select. Prerequisites, ECON 103 and 104.

**382 (II). URBAN ECONOMIC ANALYSIS (D)**  
Analysis of current urban problems, their causes, and alternatives for improvement in the future. Topics include urban public finance, location theory, land use, housing, transportation, and the environment. Prerequisite, ECON 103.

**383 (I), 384 (II). TOPICS IN APPLIED ECONOMICS (D)**  
Application of principles of micro-economics to diverse problems and policies to exhibit the uses of economic theory. Prerequisite, ECON 103.

**385, 386. SPECIAL PROBLEMS**  
Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

**391 (I), 392 (II). SEMINAR**  
Research in economic theory, problems of labor, commerce, and industry. If desirable, some other economic study may be substituted. Prerequisite, ECON 103. Credit, 1-3.

**398. SENIOR HONORS**  
Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

**399. SENIOR HONORS**  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

**RELATED COURSES:**  
**Agricultural and Food Economics**  
352. Agricultural Policy  
373. Resource and Conservation Economics  
381. International Agricultural Development

**Political Science**  
Acting Department Head: Professor Lewis Mainzer. Professors Alfange, Allen, Booth, Braunthal, Connolly, Dolbeare, Feit, Fenton,

Fliess, Goldman, Gordon, Houn, Howards, Lederle, Lewy, Maki, Oppenheim, Syed, Wiarda; Associate Professors Coulter, Friedman, Gere, King, Kramer, Meo, Mileur, Ryavec, Shanley, Sulzner; Assistant Professors Eagan, Einhorn, Elshain, Ford, Kline; Lecturer Reid.

Political science majors are required to take two of the three introductory courses (POL SCI 101, 131, or 151), which ordinarily is done in the freshman year. Normally, majors select their first two upper-division courses from among those numbered 200 to 249. Complete information concerning the political science major may be obtained in room 218 of Thompson Hall.

**101 (I), (II). AMERICAN POLITICS (D)**  
Introduction to constitutional principles and public policy making in American national government. Democratic theory, major national political institutions, electoral behavior, and selected public policy questions.

**131 (I), (II). COMPARATIVE POLITICS (D)**  
Introduction to political structures, processes and comparative national development in parliamentary, one-party, and other political systems. The relationship of cultural values to institutions; emphasis on such forces of change as democracy, industrialization, and revolution.

**151 (I), (II). WORLD POLITICS (D)**  
Introduction to the nature, dynamics, and problems of world politics. Nationalism, ideology, and other forces underlying the foreign policies of the United States, the Soviet Union, and other states, as illustrated by selected contemporary issues.

**205 (I), (II). THE PRESIDENCY IN AMERICAN GOVERNMENT (D)**  
Constitutional and political aspects of the presidency in legislation, administration and conduct of foreign and military affairs. Presidential personality and role as party leader emphasized.

**208 (I), (II). POLITICAL PARTIES AND ELECTIONS (D)**  
American political processes. Organization and functions of parties, voting behavior and elections, and effect of electoral politics on representative government.

**214 (I), (II). MUNICIPAL GOVERNMENT (D)**  
Survey of the structure, function, and politics of government in American municipalities.

**217 (I). MASSACHUSETTS POLITICS (D)**  
Analysis of the significant characteristics of Massachusetts politics as applied to political problems from an historical perspective with both a theoretical and a practical base. Field



work supplements readings, lectures, and discussions.

**219 (I), (II). STATE GOVERNMENT (D)**  
Organization, functions, and politics of American state governments. The role of the state in our federal system.

**223 (I), (II). PUBLIC ADMINISTRATION (D)**  
Organization of bureaucracy, bureaucratic life, constitutional position, and political role of governmental bureaucracy.

**226 (II). POLITICAL THEORY AND PUBLIC POLICY (D)**  
Evaluation of social policy in the United States. Emphasis on normative issues raised in controversies over selected cases of social and economic policy in the light of the main traditions of Western political thought and of recent work on the logical and ethical aspects of social choice.

**231 (II). POLITICAL DEVELOPMENT AND MODERNIZATION (D)**  
Comparative analysis of political change and development in the emerging nations.

**233 (I), (II). GOVERNMENT AND POLITICS OF THE MIDDLE EAST (D)**  
Review of the dynamics of the traditional Islamic political system and of the transformation of that system under the impact of Western penetration of the Middle East. Contemporary Middle East politics with special reference to Israel, Syria, Lebanon, and the UAR.

**235 (I), (II). GOVERNMENTS OF EAST CENTRAL EUROPE (D)**  
Survey of the major governments in the East Central European area; emphasis on the nature of Communist Party control. Governments include those of Czechoslovakia, East Germany, Hungary, Poland, Rumania, Yugoslavia, and others.

**238 (I), (II). GOVERNMENT AND POLITICS OF SOUTH AND SOUTHEAST ASIA (D)**  
Comparative study of the institutions and dynamics of government and politics in South and Southeast Asia, especially in India, Pakistan, Indonesia, and Malaysia. The issues of political stability, economic development, and relations with the United States and other great powers.

**239 (I), (II). WEST EUROPEAN COMPARATIVE POLITICS (D)**  
Analysis of the political cultures, institutions, systems and processes of selected West European countries. Emphasis on social and economic factors relating to contemporary political issues.

**240 (I). GOVERNMENT AND POLITICS OF SOUTH AMERICA (D)**  
Comparative analysis of the interest groups, political parties, and governmental institutions of the South American countries. Emphasis on the background and political culture in which Latin American politics and government take place.

**241 (II). GOVERNMENT AND POLITICS OF CENTRAL AMERICA AND THE CARIBBEAN (D)**  
Comparative analysis of the interest groups, political parties, and governmental institutions of the Central American and Caribbean countries. Emphasis on communism and the role of the U.S.

**242 (I). THE POLITICS OF SUB-SAHARAN AFRICA (D)**  
Organization and processes of African politics, centering on the general political problems facing contemporary African governments.

**243 (I), (II). COMPARATIVE AFRICAN GOVERNMENTS (D)**  
Comparative study of the political institutions and processes of five African states.

**248 (I), (II). GREAT BRITAIN AND THE COMMONWEALTH (D)**  
The practice of parliamentary government in Great Britain and the Commonwealth countries. Emphasis on the development of the conception of the Commonwealth, the institutions through which it operates, and its role in contemporary world politics.

**254 (I), (II). INTERNATIONAL RELATIONS (D)**  
The nation-state system and conceptions of national interest in modern world politics. Emphasis on forms and distribution of power, making of foreign policy, and adjusting of international conflict.

**255 (I), (II). AMERICAN FOREIGN POLICY (D)**  
Principles of American foreign policy. Emphasis on constitutional, political, and administrative considerations that influence the formation and execution of foreign policy.

**258 (II). INTER-AMERICAN RELATIONS**  
Analysis of the effect of the United States — government, business, labor and other groups — on the internal politics and economics of the Latin American countries.

**260 (I), (II). CONSTITUTIONAL LAW (D)**  
Study of the United States Supreme Court and leading cases interpreting the United States Constitution.

**261 (I), (II). THE LAW AND PRACTICE OF CIVIL LIBERTIES (D)**  
Development in American Constitutional law of the concept of civil liberty, including free speech and religion, fair trial, and race discrimination.

**270 (I), (II). ANCIENT AND MEDIEVAL POLITICAL THOUGHT (D)**  
Development of political thought and its relation to culture and institutional growth from the time of the Greeks to the end of the Middle Ages.

**271 (I), (II). MODERN POLITICAL THOUGHT (D)**  
Development of political thought and its relation to cultural and institutional growth from the rise of the modern state to the present.

**274 (I), (II). PROBLEMS IN POLITICAL THOUGHT (D)**  
An analysis of central concepts and themes in political theory. Major orientations in both classical and contemporary thought.

**281 (II). THE PRACTICE OF AMERICAN POLITICS**  
Practical American politics, taught by a prominent political leader under the University Distinguished Professorship in Public Affairs. Credit, 2.

**283 (I), (II). GOVERNMENT SERVICE**  
Full time professional experience in an agency of government. Papers and seminars required. Open to selected students by arrangement.

**285 (I), (II). LEGISLATIVE INTERNSHIP**  
Directed studies in legislative politics arranged in conjunction with government internship. Open to selected students by arrangement.

**286 (I), (II). ADMINISTRATIVE INTERNSHIP**  
Directed studies in administrative politics arranged in conjunction with government internship. Open to selected students by arrangement.

**287 (I), (II). JUDICIAL INTERNSHIP**  
Directed studies in judicial politics arranged in conjunction with government internship. Open to selected students by arrangement.

**288 (I), (II). LOCAL GOVERNMENT INTERNSHIP**  
Directed studies in local politics arranged in conjunction with government internship. Open to selected students by arrangement.

**289 (I), (II). FOREIGN AFFAIRS INTERNSHIP**  
Directed studies in international politics arranged in conjunction with government internship. Open to selected students by arrangement.



**303 (I), (II). AMERICAN POLITICAL THOUGHT (D)**

Development of American political thought from colonial times to the present.

**305 (I), (II). CONGRESS AND THE LEGISLATIVE PROCESS (D)**

Analysis and evaluation of the United States Congress, its structure, procedures, and norms. Emphasis on the legislative process and the behavior of Representatives and Senators; the relationship between Congress and the President and the Public.

**307 (II). BLACK POLITICS (D)**

Theoretical and historical analysis of the relationship of Black people to the American political system. Emphasis on the development of Black ideologies, political organizations and strategies, and on alternative forms of participation in the American political system.

**308 (II). PUBLIC OPINION IN POLITICS (D)**

Analysis of opinion and communication as aspects of the political process. Emphasis on communication through the mass media.

**311 (II). AMERICAN FEDERALISM (D)**

The American system of federalism as it has developed and changed from the early days of the Republic to the present; emphasis on the shift from a legal to a programmatic orientation and an emerging complex of inter-governmental relations.

**314 (I), (II). METROPOLITAN POLITICS (D)**

Problems of metropolitan areas; actual and possible political approaches to their solution. Emphasis on the role of parties, the development of political leadership, existing political institutions, and pressure group activity. Prerequisite, POLSCI 208.

**316 (II). COMPARATIVE LOCAL GOVERNMENT (D)**

The formal institutions of government and patterns of political behavior characteristic of cities and related local units of government in a variety of nations. Focus on common urban problems, communist participation, and decision-making.

**320 (I), (II). GOVERNMENT OF BUREAUCRACIES (D)**

Inquiry into the meaning and possibility of "democracy" within large-scale organizations.

**323 (II). PUBLIC PERSONNEL ADMINISTRATION**

The personnel function in bureaucracy: patronage and merit; career service and political executive; authority and informal organization; employee rights and collective action.

**324 (II). ADMINISTRATIVE LAW (D)**

Governmental activities in the regulation of industry, agriculture, and labor. Emphasis on the legal framework within which these activities operate.

**326 (I), (II). AMERICAN PUBLIC POLICY**

Analysis of selected areas and problems in public policy making in the American political system. Topics regularly offered: environmental policy, educational policy, higher education policy, social policy, economic policy, science policy.

**327 (I). COMPARATIVE PUBLIC POLICY (D)**

Comparative analysis of policy formation. Emphasis on the process of social and economic policy decision-making in selected industrial societies; the interaction of institutions, ideas, and power in decisions concerning social welfare, economic planning, and related policy areas.

**334 (II). GOVERNMENT AND POLITICS OF JAPAN (D)**

Government and politics of modern Japan; emphasis on post-1945 period. Descriptive analysis of structure and function of governmental and political processes.

**336 (I), (II). GOVERNMENT AND POLITICS OF THE SOVIET UNION (D)**

Historical and ideological influences on Soviet politics; the interconnection of social and political institutions and processes; membership, organization, and operation of the Communist Party; the state structure and law; and contemporary Soviet foreign policy.

**337 (I), (II). GOVERNMENT AND POLITICS OF CHINA (D)**

An analysis of the genesis and dynamics of the Chinese Communist movement, the ideology and organization of the party and the government, and major domestic and foreign policies since 1949; special reference to the Maoist attempts to reform man and society as well as to achieve modernization.

**340 (II). GOVERNMENT AND POLITICS OF SPAIN AND PORTUGAL (D)**

An examination of the unique aspects of the process of political development (and/or decay) in Spain and Portugal, with emphasis on the heritage of these two nations as reflected in their New World colonies in the Americas and on the present-day pattern of politics in the Iberian peninsula.

**347 (I), (II). ARMED FORCES AND POLITICAL POLICY (D)**

Comparative study of civilian-military relations in Western and non-Western nations. Emphasis on both regular and irregular armed forces.

**350 (II). SOVIET FOREIGN POLICY (D)**

Analysis of continuity and change in Soviet perceptions, goals, methods, and priorities in foreign policy. Emphasis on the period since World War II.

**351 (II). CHINESE FOREIGN POLICY (D)**

Examination of the geographical, historical, ideological, economic, military, and other factors in Peking's foreign policy since 1949. Emphasis on mainland China's relations with various countries and her positions on major international issues.

**356 (II). INTERNATIONAL LAW (D)**

The origin, character, and function of international law. Prerequisite, POLSCI 254 or HIST 211.

**357 (II). INTERNATIONAL ORGANIZATION (D)**

International organization in the 20th century. Emphasis on the United Nations and regional organizations. Prerequisite, POLSCI 254 or HIST 211.

**358 (I). INTERNATIONAL RELATIONS: ASIA (D)**

Introduction to general problems of Asian international relations since 1859, with detailed examination of problems since World War I. Emphasis on China, Japan, and the new nations.

**359 (I). WESTERN EUROPEAN FOREIGN POLICIES (D)**

Analysis of the emerging institutional patterns of the West European communities. Emphasis on the major political, military, and economic regional organizations and their relations with Eastern Europe and the United States.

**362 (I), (II). POLITICS, LAW AND JUDICIAL BEHAVIOR (D)**

American court systems; the processing of cases, judicial backgrounds and selection, judicial decisional behavior, some major court policies and the responses to them from groups and institutions within the larger political system.

**371 (I). FEMINIST POLITICS AND POLITICAL THEORY**

Sex as a category for analysis in classical and contemporary political theory. Relations between the sexes in relation to the larger social and political functions they serve.

**373 (I). HUMAN NATURE AND POLITICS (D)**

The role of the individual in the political process and especially with the problem of political perception, the way in which symbols structure reality, and the use of symbols to maintain stability or effect change in the political system.

**375 (I). QUANTITATIVE POLITICAL ANALYSIS**

Introduction to basic applications of statistical techniques and reasoning to political data.

**378 (II). DEVELOPMENT AND PRACTICE OF SOVIET MARXISM**

The philosophic and religious origins of Soviet Communism in Western and Eastern Europe. Analysis of the classics from Marx to Khrushchev.

**380 (I), (II). TUTORIAL IN AMERICAN POLITICS AND LAW**

Directed readings on announced topics in American national government, politics, and public law.

**381 (I), (II). TUTORIAL IN STATE-LOCAL POLITICS AND PUBLIC ADMINISTRATION**

Directed readings on announced topics in state and local government and politics and public administration.

**382 (I), (II). TUTORIAL IN COMPARATIVE POLITICS**

Directed readings on announced topics in comparative government and politics and area studies.

**383 (I), (II). TUTORIAL IN INTERNATIONAL RELATIONS**

Directed readings on announced topics in international relations and foreign affairs.

**384 (I), (II). TUTORIAL IN POLITICAL THEORY**

Directed readings on announced topics in political theory, analysis, and methodology.

**385, 386. SPECIAL PROBLEMS**

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

**391, 392. SEMINAR**

Special problems in the study of politics.

**393 (I). SENIOR HONORS SEMINAR**

Seminar for senior honors students on the study of politics. Prerequisite, invitation from the Departmental Honors Committee and concurrent enrollment in POLSCI 399.

**398. SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

**399. SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

**Communication Studies**

Chairman of Department: Associate Professor Kenneth L. Brown. Professors Bevilacqua, Blankenship, Lynch, Reid, Stelzner; Associate Professors Matlon, Meyer, Pearce, Savereid, Shelby; Assistant Professors Bacal, Bryant, Conville, Cronen, Davis, Harper, Johnson, Mihevc, Price, Stromgren; Instructor Stevens.

Students wishing to major in Communication Studies are encouraged to visit the main office of the department in Machmer Hall to secure specific information concerning concentration in 1) Interpersonal Communication and Rhetoric, 2) Mass Communications and 3) Communication Education.

**GENERAL**

**385, 386. SPECIAL PROBLEMS**

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

**398. SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

**399. SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

**INTERPERSONAL COMMUNICATION AND RHETORIC**

**160. THE ART OF RHETORICAL DISCOURSE**

The history, theory, and practice of rhetoric, as an affective mode of eloquence and as a conceptual frame of reference underlying expression in its several forms, verbal and graphic.

**170. THE PROCESS OF COMMUNICATION**

The process and functions of communication in the two-person, small-group, and public contexts. Topics include: outcomes of communication, development of a model of interpersonal communication, learning theory, person perception, interpersonal attraction, language and nonverbal messages. Emphasis on increasing competence as a communicator in each of the contexts.

**201. ADVANCED PUBLIC SPEAKING**

Practical communication. For students who want to go beyond the General Rhetoric Program in developing their ability to communicate ideas. Emphasis on one-to-group communication.

**202. SMALL GROUP COMMUNICATION**

The theory and process of small group communication. Practical application to group discussion; leadership; and problem solving.

**203. ARGUMENTATION**

Reasoning and evidence as used in public deliberation. Application to the building and refuting of arguments.

**204. PERSUASION THEORY**

How attitudes are formed and changed through speech communication. An appropriate ethic of persuasion in today's society.

**205. CLASSICAL RHETORICAL THEORY (C)**

Major rhetorical theories from the emergence in ancient Greece to the Late Roman Empire. Special emphasis is given to the Sophists, Plato, Aristotle, Hermagoras, Cicero, Quintilian, and St. Augustine. Prerequisite, permission of instructor.

**207. RHETORIC AND SOCIAL CHANGE IN AMERICA (D)**

A survey of the rhetorical strategies of various American social movements such as the American Revolution, the populist movement and the civil rights movement.

**210. INTERPERSONAL COMMUNICATION**

Nature and effects of person-to-person speech communication. Emphasis on the behaviors of everyday verbal and non-verbal communication that produce effects on ourselves, others society and future communication. The relationship of interpersonal to public communication.

**211. CONTEMPORARY RHETORICAL THEORY (D)**

Contemporary philosophical approaches to rhetorical theory. Selected major contemporary theorists such as Weaver, Richards, Burke, Duncan, McLuhan, and Perelman.

**212. PARLIAMENTARY PROCEDURE**

The basic principles upon which a group operates using parliamentary law and practical drill as the class organizes itself into an operating parliamentary body.

**250. SPEECH AND LANGUAGE THEORY (D)**

The nature of speech and language and the process involved in acquiring, understanding and producing speech and language.

**303. DEBATE PRACTICUM**

The preparation of materials on current debate propositions and participation in audience debates and in intercollegiate and intramural tournament activity. Credit, 1. May be repeated up to 4 credits.

**309. RHETORIC AND SOCIETY: SPECIAL TOPICS**

Intensive examination of the rhetorical discourse of a particular period, movement, issue, genre or theme. Examples include the



rhetoric connected with racial controversies, populism, imperialism and anti-war movements, the American Revolution, revolutionary movements in other countries and religious reform. Topics change each semester. May be repeated for a total of 6 credits.

#### 314. APPROACHES TO RHETORICAL CRITICISM

Various approaches to rhetorical transactions: Historical, Formalist, Sociocultural, Psychological, and Archetypal.

#### 350. BEHAVIORAL RESEARCH IN COMMUNICATION

Introduction to research design and the practical problems in carrying out experimental and descriptive research in speech communication. Students will pursue research projects either individually or in groups.

#### MASS COMMUNICATIONS

##### 121. INTRODUCTION TO MASS COMMUNICATIONS (D)

Including history and development, structure, roles, and functions. Standards for evaluation of the mass media.

##### 123. MEDIA PRODUCTION

The basic processes by which media (radio, television, film) content moves from idea through the creative process to finished program and a limited practical application of these processes in the studio.

##### 223. THE PROGRAM PROCESS IN TELEVISION

The basic program process to television from original idea to finished program. Training and procedures involved in the technique of television production. Experience in creating and producing television programs. Evaluation of program forms. 2 class hours, 1 2-hour laboratory period.

##### 224. CREATIVE TELEVISION PRODUCTION/DIRECTION

Advanced theories of television production and direction; creation and production-direction of experimental program. Prerequisite, COMSTU 223 or 226. 2 class hours, 1 2-hour laboratory period.

##### 225. HISTORY AND DEVELOPMENT OF THE MOTION PICTURE

Evolution of the motion picture as an international art form and social force. Analysis of form, technique and impact of film. Selected screening of representative film styles and content.

##### 226. PRINCIPLES AND TECHNIQUES OF FILM MAKING

The theory and principles of film making for the motion picture theatre and television. Experience in writing, directing, editing and sound recording of films. Evaluation of film

techniques, form and content. 1 class hour, 1 4-hour laboratory period per week.

##### 227. FILM THEORY AND CRITICISM (C)

Basic theories of film communication; various film modes and structures. Development of bases for evaluation of films according to communicative and aesthetic values. Prerequisites, COMSTU 121 and 225.

##### 228. MASS MEDIA IN SOCIETY (D)

Mass media as a major force in the American society. Emphasis on cultural, economic, political and social effects. Prerequisite, COMSTU 121.

##### 229. BROADCAST NEWS AND PUBLIC AFFAIRS

Legal, ethical and practical considerations involved in selecting, preparing and presenting news broadcasts, news documentaries and other public affairs programming. Prerequisites, COMSTU 121 and 228. Field trips.

##### 232. BROADCASTING AND THE GOVERNMENT (D)

The role, function and effect of regulation on broadcasting. Prerequisites, COMSTU 121 and 228.

##### 359. POLITICAL COMMUNICATION: MEDIA & CAMPAIGNING

Diffusion of persuasive political communications through standard and created media. Examination of campaign techniques (i.e., research on issues and themes, electorate polling, thematic media approaches, campaign strategies) in campaign management and administration.

##### 391. PRO SEMINAR IN MASS COMMUNICATIONS

Analysis and discussion of major problems in the field of mass communications. Prerequisites, Written permission of instructor, senior standing, 18 hours in Mass Communication courses.

#### Sociology

Chairman of Department: Professor N. J. Demerath III. Professors Driver, Gordon, Hollander, Killian, Korson, Page, Park, Platt, A. Rossi, P. Rossi, Wilkinson, Yaukey; Associate Professors Anderson, Chevan, Chilton, Faulkner, Golden, Hewitt, Hollander, Hurn, Lewis, Manfredi, Mehta, Piedmont, Simpson, Sutton, Tausky; Assistant Professors Harris, Roof, Stokes, Tessler, Westcott, J. Wright; Instructor Key; Lecturer S. Wright.

The following prerequisites, required courses, and electives constitute the program for Sociology majors:

- I. The sociology major requires a minimum of 27 credits or nine courses distributed as indicated below. No major is permitted to

take more than a total of 36 credits or 12 total courses in sociology.

- II. Each major is required to take both SOCIOL 201 (Sociological Analysis I: Theories and Perspectives) and SOCIOL 202 (Sociological Analysis II: Data Collection and Analysis). These courses should be taken during the sophomore year as further preparation for the upper division courses to follow. At least one sociology course, preferably at the 100-level is a prerequisite for 201 and 202.

- III. In addition to 201-202, each major is required to take at least one upper division course (at the 210-level or above) in three of the following five core areas, and no more than three courses can be taken for credit toward the major in any one core area. The core areas include: A. Social Organization and Institutions; B. Social Issues and Policies; C. Demography and Urban Sociology; D. Social Psychology; E. Theory and Methods.

- IV. It is recommended that majors with special interest in a core area take a 300-level practicum in that area during their senior year. Sociology majors, especially those who are considering graduate studies, are strongly advised to take a statistics course, SOCIOL 282 (History of Sociological Theory) or 283 (Contemporary Theory), SOCIOL 295 (Quantitative Methods in Social Research) or 296 (Qualitative Methods in Social Research).

Since majors have a number of electives at the 210-level or above. It is essential that both majors and prospective majors consult early and often with their academic advisers in selecting their courses. This is particularly important for anyone planning graduate study, but is important for others as well. Questions regarding the program may be directed to Professor Wilkinson in Thompson 616.

##### 102. AGE, SEX, AND KINSHIP IN CONTEMPORARY SOCIETY (D)

Introduction to sociology with reference to the problems of growing up and growing old in the context of the contemporary family. Ranges from problems of youth and maturation to matters of old age and the sociology of death. Problems of sex roles; discussion of a wide variety of sexual relationships.

##### 103. SOCIAL PROBLEMS (D) (formerly 275)

The distribution and interrelationships among some types of deviance and disorganization; crime, mental disorders, addiction, suicide, family tension. Theories of causation; research projects.

##### 104. URBAN LIFE AND INDUSTRIAL SOCIETY (D)

Introduction to the sociological perspective, focused upon the nature and consequences of urban industrial society.



105. SELF, SOCIETY, AND

INTERPERSONAL RELATIONS (D)

Basic concepts, perspectives, and data in sociology via the approach of social psychology. The relationship between the individual, the group, and society. Topics include socialization, social roles, social interaction, dynamics of small groups, the self, attitudes, and language and communication.

106. RACE, SEX, AND SOCIAL CLASS:

INEQUALITY IN AMERICA (D)

The differential distribution of opportunities and rewards in society. The manner in which membership in a particular race, sex, or social class grouping may serve to increase or diminish opportunities to achieve positions of power, social prestige, economic security and psychological rewards.

107. CONTEMPORARY AMERICAN

SOCIETY (D)

A "first course" in sociology, with emphasis on contemporary American society. Current theories of how modern industrial societies are organized, applied to the American case. Among topics are: socialization in the contemporary American family; the American educational system; occupational composition of the American labor force; women in America; poverty and income distribution; race, religion, and ethnicity as factors in the American social structure; and the American political system.

108. SOCIOLOGY OF LEARNING:

PROBLEMS OF PERSONAL AND  
SOCIAL CHANGE (D)

Primarily for lower division students. The changing relationships between educational institutions and society in the modern world. Focus on educational institutions as status transmission and socializing agencies. Attention to educational ideologies which stress the importance of change in educational institutions.

201. SOCIOLOGICAL ANALYSIS:

THEORIES AND PERSPECTIVES

The most important varieties of contemporary sociological thought. Focus on the differing perspectives on and assumptions about human society which underlie contemporary sociological theories. The nature of theory in sociological research; the most important theoretical perspectives currently in use. Prerequisites: at least one other sociology course preferably at the 100-level.

202. SOCIOLOGICAL ANALYSIS II: DATA  
COLLECTION AND ANALYSIS

Introduction to methodology and research techniques in sociology. Quantitative and qualitative techniques including field research, interviewing, participant and laboratory observations, survey analysis, and sampling techniques.

222. SOCIOLOGY OF EDUCATION (D)

Social and economic interrelationships of education, stressing social class and social change. Attention to developing countries and minority people.

224. HIGHER EDUCATION IN AMERICA  
(D)

The organizational context within which college and post-graduate education takes place. Historical and international comparison, with review of the relevant discussions of individual development; higher education in its broader relationship to other human activities.

231. SOCIOLOGY OF AGING (D)

Aging as a social phenomenon in the United States and Massachusetts with emphasis on the elderly population. Topics include biological, psychological and social factors in the aging process, the demographic and ecological conditions of aging, the problem of retirement, and public policy and politics as they relate to old age.

233. POLITICAL SOCIOLOGY (D)

The relationships between the political and non-political institutions and values of society. The formal and informal aspects of the exercise of power, its social and cultural setting. Social movements; their appeal, ideology and social base. Extremism, pluralism and totalitarianism. Participation and pseudo-participation. The cults of personality, charisma and propaganda. The culmination of social conflict: coercion, its processes and techniques.

235. COLLECTIVE BEHAVIOR (D)

An analysis of the nature and process of collective behavior, including such topics as crowd behavior, rumor and communication, opinion and its formation, social movements, collective responses to deviance and other problematic forms of behavior, behavior in disasters, etc. Emphasis on the development of concepts and theories and their application to specific types and instances of collective behavior. Prerequisite: 100-level course in sociology.

241. SOCIOLOGY OF ATTITUDES,  
BELIEFS, AND VALUES (D)

Attitudes, beliefs, and values as social phenomena. The cognitive and evaluative processes which underlie and help to account for the variety of attitudes, beliefs, and values found within a society and which differ from society to society. Permission of instructor required.

242. SOCIOLOGY OF PARENTHOOD

A blending of sociological and social psychological concepts: parent-child relationships viewed historically, cross-culturally, and developmentally. Students develop projects of their own in such general areas as parent-

child relationships as interactive systems and the influence of children on the parents' development as adults.

243. SEX AND SOCIETY

A cross-disciplinary course. Human sexual behavior from a variety of perspectives, including psychology and physiological as well as sociological. Topics include development of sex and gender identity, the sexual act and myths about sexuality, cross cultural dimensions of sexual behavior, contraception and abortion, pregnancy and childbirth, sexual deviance, and population growth and policy.

246. SOCIAL MOVEMENTS (D)

Analysis of the structure, dynamics and significance of social movements, particularly in modern society. Political and religious movements. Emphasis on leadership, ideology, member commitment and control, and the opposition as they affect the career of a social movement.

247. ELEMENTARY STATISTICS

An introduction to principles and techniques with reference to application in sociology.

248. SOCIAL STATISTICS

Introduction to principles of multivariate techniques including sociology and related fields. Prerequisite, SOCIOL 247, equivalent, or permission of instructor.

249. OCCUPATIONS AND PROFESSIONS  
(D)

Comparative analysis of the social organization of occupations and careers. Emphasis on the process of client control, occupational mandate and autonomy, and career socialization.

250. DEVIANCE AND SOCIAL ORDER (D)

The relationship between deviance and the maintenance of social order. Sociological theories of individual and subcultural deviance. Emphasis on the role of agents and agencies of social control in the definition of categories of deviance and in the selection and treatment of deviants. Prerequisite: at least one other sociology course preferably at the 100-level.

251. URBAN SOCIOLOGY (D)

A comparative analysis of cities and of urbanization with reference to demographic characteristics of urban population, urban ecology, and urban social structure.

252. URBANIZATION AND THE CITY (D)

A comparative analysis of world urbanization, its trends, causes and consequences. Regional variations in the nature of urbanization and trends in major countries analyzed and related to major aspects of the spatial and social structure of cities. Prerequisite, SOCIOL 101.

**253. SOCIOLOGY OF LAW (D)**

The institution of law in society, with reference to variations among societies in systems of law, the development of English and American law, the structure of the legal profession, and the relationships between the legal system and other aspects of society.

**254. WORK AND SOCIETY (D)**

The contrasting ways selected industrial and developing societies are organized (e.g., Russia, China, Israel, Japan, Cuba, U.S.) to elicit work effort. Basic data on the U.S. work scene: occupational and income distributions, education and minority groups.

**255. SOCIOLOGY OF RELIGION (D)**

The relationship of religious beliefs and institutions to cultures and societies.

**256. RACE RELATIONS (D)**

The social, economic and political aspects of racial and ethnic problems in the United States; briefer consideration of similar problems in Africa and Asia.

**257. THE FAMILY (D)**

The development of the customs of courtship and marriage and the contemporary family. The basic causes of changes and trends of the family.

**258. SOCIAL INTERACTION (D)**

Social interaction in the context of groups, especially small groups. The dynamics of interaction process as the basis for group development. Attention to the emergence of normative and affective subsystems and to role differentiation.

**259. SOCIAL STRATIFICATION (D)**

The factors associated with institutionalized inequality in social life. A consideration of class, status, and power in American society.

**260. SOCIETY AND THE INDIVIDUAL (D)**

A course in sociological social psychology examining individual and group behavior in the context of structured social arrangements. Topics include socialization, motivation, the social control of behavior, attitudes and behavior, the self-concept, and some aspects of collective behavior. Materials are drawn from a variety of perspectives, ranging from behavioral social psychology and field theory to symbolic interaction and ethnomethodology. Prerequisite, SOCIOL 101.

**261. POPULATION PROBLEMS (D)**

An analytical study of population composition; the causes and consequences of changes in the basic demographic variables: fertility, mortality, and migration.

**262. THE DEMOGRAPHY OF MINORITY GROUPS (D)**

Demographic and ecological factors affecting

relationships between ethnic, racial, and religious groups. The demography of minorities from a comparative perspective, drawing upon materials from various nations. Prerequisite, SOCIOL 256.

**265. NATIONAL AND REGIONAL POPULATION STUDIES (D)**

Analysis of national and regional populations, emphasizing historical development and current structure of demographic systems. This course is designed for make available to students the real specialties of the teaching staff. Prerequisite, SOCIOL 261.

**266. COMMUNITY AND HUMAN ECOLOGY (D)**

The origin, development, location, junctions, and systems of communities. Ecological process of change, invasion and succession, centralization, decentralization, concentration, suburbanization, and patterns of residence and segregation of racial, ethnic, and religious groups are comparatively analyzed.

**267. APPLIED SOCIAL PSYCHOLOGY**

In-depth analysis of social psychological theory and research in relation to selected problems of attitudinal and behavioral change. Examples of topics are: compliance and resistance to authority, prejudice and race relations, management of deviance, modification of patient behavior for health maintenance and disease control, issues in the social psychology of mental health, poverty and inequality, and the women's movement.

**269. INTERPERSONAL RELATIONS AND GROUP STRUCTURE**

Various theories of interpersonal attraction and of group interaction and leadership. Emphasis on the types of interpersonal and group structures which result. Social cliques, family and kinship structures, community and neighborhood networks, interpersonal communication systems and leadership structures.

**270. SOCIAL STRUCTURE OF INDIA (D)**

The origins, distributions, and cultural traits of the major groups in India. Attention to marriage, family, caste patterns, and positions in the economic and political system.

**272. SOCIAL CHANGE (D)**

Changes arising from culture contact, social reform, and technical inventions. Planned and unplanned change, particularly in underdeveloped countries.

**273. SOCIOLOGY OF SEX ROLES**

The position of women to the structural and institutional arrangements of contemporary American society. Analysis of the socialization process of learning sex roles, woman's place in social stratification, and changes in woman's place through an investigation of the

structure and issues of the Women's Liberation Movement.

**276. DRUGS AND SOCIETY (D)**

The sociological implications of drug usage, including alcohol as well as "mind altering" drugs. Effects of drugs, prevalence of usage, social correlates, anthropological and historical perspectives, problems and management of addiction, social control of use and abuse, social implications of drugs, especially with respect to the counter-culture movement.

**278. CRIMINOLOGY (D)**

The nature of crimes and the factors underlying criminal behavior. The machinery of justice; the law, courts, police systems, and correctional institutions.

**280. SOVIET SOCIETY (D)**

Survey of the major social institutions, process and problems of Soviet Society; official and popular values and norms, stratifications, social controls, the family, types of socialization and social problems (i.e., crime, delinquency, the misuse of leisure, rural migration, etc.). The nature and usefulness of various theoretical models of Soviet Society.

**281. SOCIOLOGY OF COMMON SENSE KNOWLEDGE**

How knowledge is generated and used in the social context of everyday life. Topics include: process of acquiring common sense knowledge and constructing social reality; the social basis of perception, observation and inference making, contradiction, consistency and other logical relations in everyday practices.

**282. SOCIOLOGICAL THEORY (D)**

Contributions of European and American writers who have concerned themselves with theories of the origin, growth, and development of human social organization.

**283. CONTEMPORARY CRITICAL SOCIAL THEORY**

Twentieth century critical social theory in Western Europe and the United States.

**285. COMPLEX ORGANIZATIONS (D)**

An analysis of the processes leading to the formation, stability and instability of complex organization. Theoretical and empirical work related to these processes.

**286. SOCIOLOGY OF MEDICINE (D)**

Survey of the field of medical sociology, and examination of the medical institution using sociological concepts. Organization and utilization of medical care, social epidemiology, interaction between the community and the medical institution, patient-practitioner interaction.

**287. SOCIOLOGY OF MENTAL DISORDERS (D)**

Influence of social factors on diagnosis, treat-



ment, and possible etiology of mental disorders. Application of sociological concepts and methods in considering: nature and extent of mental illness, mental hospitals, and the community in rehabilitation.

## 292. BACKGROUND TO THE STUDY OF SOCIAL WELFARE (D)

The historical development and current status of British and Americans concerns about poverty in the context of the Industrial Revolution; sociological perspectives concerning differentials in access to economic security and social rewards, and problems of measurement and planning as related to social policies.

## 293. ISSUES IN SOCIAL POLICY PLANNING (D)

Primarily for upper division students. Focuses upon (1) systematic policy planning, the role of research and development and the role of the scientific community in domestic policy programming; and (2) selected substantive issues which draw heavily from social and geographical distributions of relative access to the valued goods, services and rewards in the society and consideration of mobility processes upon the redistribution of such access. Prerequisite, permission of instructor.

## 294. TECHNIQUES IN SOCIAL POLICY DEVELOPMENT: EVALUATION

Introduction to principles and techniques of evaluation of social programs and policies. Review of social planning processes; case studies develop understanding of concepts and techniques for the following topics: program and evaluation objectives specification; performance criteria; social context of evaluation; program impact, component and monitoring strategies; and integration of evaluation in the planning process. Considers levels of effort and quality of evaluative efforts in federal and state agencies.

## 295. QUANTITATIVE METHODS IN SOCIAL RESEARCH

The use of quantitative concepts in theoretical formulations and data and analysis in sociology. Topics include: unidimensional measurement; small group observation and experimentation in the interaction laboratory; sampling and experimental designs; measures of association; and simple mathematical models. Use of the computer built into instructional materials. Students do small scale exercises in research.

## 296. QUALITATIVE METHODS IN SOCIAL RESEARCH

Theory and practical application of field research in sociology. Emphasis on participant observation, respondent and informant interviewing and uses of historical data. Data collection and analysis using these techniques under supervision of instructor. Prerequisites: advanced course work in sociology and permission of instructor.

## 360. TECHNIQUES OF DEMOGRAPHIC ANALYSIS (SEMINAR)

The methods for gathering population data and the uses of these data to measure mortality, fertility, migration and population composition. The theoretical interrelations among these factors. Methods for making population estimates and projections. Prerequisite, SOCIOL 261 or a course in statistics, and permission of instructor.

## 363. FERTILITY AND SOCIETY (SEMINAR)

A review of past and present trends in fertility on a worldwide basis, an analysis of the social determinants and consequences of these trends, and an assessment of the likely future trends. Prerequisites, SOCIOL 261 and permission of instructor.

## 367. POPULATION THEORIES AND POLICIES (SEMINAR)

The major theories concerning population growth, distribution, internal and international migration, and population quality. Theorists include the pre-Malthusians, Malthus, Marx, Keynes, Stouffer, Petersen, Myrdal, Clark, Coale, Keyfitz, Spengler, and Davis and others. Population policies include the direct ones as well as social policies with demographic consequences. Attention to a cross-cultural analysis of the relations among sex status, social status, and human reproduction. Prerequisites, SOCIOL 261 and permission of instructor.

## 375. SOCIOLOGY OF LITERATURE (SEMINAR)

Literature as a source of information about society, in particular social values and norms, social change and conflict and the various relationships between society and the individual. The conditions under which literature reflects or distorts social realities and the interaction between literary products and their social environment. Permission of instructor required.

## 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

## 391. SEMINAR IN SOCIOLOGY

A survey and critical evaluation of the literature pertaining to selected topics in sociology. For juniors and seniors. Permission of instructor required.

## 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

## 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Psychology

Acting Department Head: Professor Bonnie Strickland. Professors Appley, Berger, Bogartz, C. Clifton, Donahoe, Dzendolet, Epstein, Feldman, Kates, Levinger, Moore, J. Myers, N. Myers, Raush, Southworth, Staub, Steiner, Watt; Associate Professors Ajzen, Averill (Associate Department Chairman), Ayres, Carlson, Cashdan, Chumbley, R. Clifton, Daehler, Eagly, Fite, Gadlin, Gold, Harmatz, Jarmon, Kamil, Moss, Schummer, Sulzer-Azaroff, Turner, Well; Assistant Professors Anderson, Bean, Dorris, Eichelman, Friedman, Jones, Kaplan, Lieberman, McLoyd, Nelson-Shapiro, Novak, Olley, Polatsek, Reisman, Royer, Simonson, Todd, Wade, Wisocki. Lecturer Rogers.

The courses in the Psychology Department are planned to impart an understanding of the basic principles, methods and data of psychology as a science and the application of this knowledge to current issues. The Department recognizes that interest in psychology is not limited to those who intend to pursue careers in the discipline; thus course offerings permit students to pursue study of various aspects of the subject to differing levels of depth. The wide range of the discipline permits the student to pursue programs of study which lead to either the B.A. or the B.S. degree.

PSYCH 120 and 130 are the prerequisite entrance courses for all majors. Students interested in majoring in psychology must also elect PSYCH 140 and 145, and may then pursue a general psychology major or one designed for those preparing for graduate study in the field. The general psychology major provides opportunities for those seeking a general education or for those entering career fields for which psychological information is relevant.

The psychology major must elect, in addition to PSYCH 120, 130, 140, and 145 the following: A minimum of 24 (and no more than 40) credits of advanced level courses (numbered above 200) in the Department. Included in the electives must be at least two courses from each of the following two groupings: A) 210, 220, 230 and 250; and B) 260, 270, and 280. This program allows the student considerable flexibility both within and outside the Department.

There are some College differences in the requirements for the B.A. and B.S. degree. This will rarely affect the student's choice of major courses, but it is still recommended that he or she see an advisor to make sure that the overall program will meet the College requirements for either the B.A. or B.S. degree.

In addition to the basic program of the general psychology major, it is recommended that students interested in a career in Psychology elect at least one laboratory course from each of the following two groupings: A) 211, 221, 222, 231 and 251; and B) 261, 271, 272, 281, and



282. These laboratory electives must be taken in proper sequence with their associated non-laboratory prerequisites or corequisites. These students are encouraged to elect seminars 391, 392 during their junior or senior years.

Students in the program (either B.A. or B.S.) who are eligible are encouraged to participate in the Honors Program in their junior and senior years.

*\*IMPORTANT NOTE: The prerequisites for Psychology courses are now being revised. The Department soon will have available a complete listing of courses and prerequisites. Please refer to that listing and to the Course Description Guide for the semester in which you are registering.*

#### 101. ELEMENTARY PSYCHOLOGY (D)

An introduction to the basic approaches and concepts of modern psychology. Examples from the areas of perception, conditioning, cognitive processes, social behavior, tests and measurements, and personality.

110. PSYCHOLOGY OF ADJUSTMENT (D)  
Problems of personality development and adjustment. Psychological nature of man, conflict, and thinking and adjustment.

#### 120. PSYCHOLOGY AS A NATURAL SCIENCE

Introduction to psychology including those fields concerned with a natural science approach to the study of behavior. Emphasis on the scientific method, biological determinants and bases of sensation, perception and learning, comparative and evolutionary perspectives on behavior and the role of early experience and language in human behavior.

#### 130. PSYCHOLOGY AS A SOCIAL SCIENCE

Introduction to the basic approaches and concepts of psychology as a social science. Topics include issues from clinical, developmental, educational, human learning, and language, personality and social psychology.

#### 140. METHODS OF INQUIRY IN PSYCHOLOGY

Introduction to the way questions about behavior are formulated and then tested through laboratory experiments, field research methods, naturalistic observation techniques. Lectures, discussions, and laboratory. Concepts from many areas of psychology, to illustrate procedures used in designing, conducting, reporting, and interpreting psychological research. Prerequisites, PSYCH 120 and PSYCH 130. 2 class hours, 1 3-hour laboratory period.

#### 145. STATISTICS IN PSYCHOLOGY

Introduction to statistical principles and techniques as applied to psychological data. 3 class hours, 1 1-hour laboratory.

#### 210. SENSATION AND PERCEPTION (D)

Methods, data and theories of the functioning of various sensory systems. Topics include a survey of basic sensory processes in the cutaneous senses, audition, vision, gustation, and olfaction; and higher perceptual processes in selected senses. Prerequisite, INTRO PSYCH.\*

#### 211. LABORATORY IN SENSATION AND PERCEPTION

Selected laboratory exercises in audition and vision and a semester project chosen by the student, with the aid of the instructor, in some area of sensation or perception. Prerequisites, PSYCH 140 and 145 and 210. 2 2-hour laboratory periods.

#### 220. LEARNING AND THINKING (D)

A general survey of animal and human learning and performance. Topics include: factors affecting acquisition, generalization, discrimination, extinction, and transfer in animals and humans; memory; and higher cognitive processes in humans. Prerequisite, INTRO PSYCH.\*

#### 221. LABORATORY IN HUMAN LEARNING

Introduction to methods used in investigating rote verbal learning, concept formation, short-term retention, verbal conditioning, artificial language learning, motor-skills, and other phenomena in human learning and retention. Prerequisites, PSYCH 140, 145 and 220. 2 2-hour laboratory periods.

#### 222. LABORATORY IN ANIMAL LEARNING

Introduction to methods used in investigating classical conditioning and operant behavior primarily using laboratory animals as subjects. Topics studied in the laboratory include: acquisition, generalization, discrimination, extinction, and transfer phenomena. Prerequisites, PSYCH 140 and 220. 2 2-hour laboratory periods.

#### 230 (I), (II). MOTIVATION (D)

Introduction to theories and research on the nature and determinants of motivation. Topics include instinct, behavior energization concepts, biological and acquired bases of emotions and motives, frustration, conflict and stress. Prerequisite, INTRO PSYCH.\*

#### 231. LABORATORY IN MOTIVATION

Methods of investigating motivation, including both laboratory and field studies using human and animal subjects. Includes selected projects conducted individually and in small groups by members of the class. Prerequisites, PSYCH 140, 230. 2 2-hour laboratory periods.

#### 242. ADVANCED EXPERIMENTAL PSYCHOLOGY

A presentation and critical evaluation of laboratory techniques and experimental methods used in psychology. May be taken for

one to three credits per semester dependent upon the number of techniques studied; may be repeated for a total of nine credits. Prerequisites: one undergraduate course in experimental psychology or permission of instructor. Credit, 1-3.

#### 245. STATISTICAL INFERENCE IN PSYCHOLOGY

Application of statistical procedures to analysis of psychological data and to problems of measurement in psychology and related fields. Prerequisites, INTRO PSYCH,\* PSYCH 145, or STAT 121 and permission of instructor. 2 class hours, 1 2-hour laboratory period.

#### 250. PHYSIOLOGICAL PSYCHOLOGY (D)

Neural bases of behavior, current issues in physiological psychology; psychobiological investigations of learning, sensory processes, motivation, and instinctive behavior. Prerequisites, INTRO PSYCH\* and ZOOL 101 or permission of instructor.

#### 251 (I). LABORATORY IN PHYSIOLOGICAL PSYCHOLOGY

Development of skills in laboratory techniques used in physiological psychology, including animal neurosurgery, electro-physiological stimulation and recording, and assessment of drug-behavior interactions. Prerequisites, PSYCH 140 and 250. 2 2-hour laboratory periods.

#### 252. DRUGS AND BEHAVIOR

The psychobiological foundations of drug-behavior interactions. The neural and neurochemical basis of behavior, basic pharmacology, drugs that affect mood and their mode of action, the psychological and physical bases of drug dependence and addiction, experimental approaches to psychopharmacology. Prerequisites, INTRO PSYCH\* and ZOOL 101.

#### 260. CHILD BEHAVIOR AND DEVELOPMENT (D)

Psychological development of the child, including theories, methods, and data of child behavior studies. Prerequisite, INTRO PSYCH.\*

#### 261. LABORATORY IN CHILD BEHAVIOR AND DEVELOPMENT

Selected experiments investigating perceptual, conceptual, learning, and social processes in children. Prerequisites, PSYCH 140, 145, and 260. 2 2-hour laboratory periods.

#### 262. CHILD PSYCHOLOGY (D)

Psychological development of the child, including language, emotions, intelligence, social behavior, motivation, and personality. Not open to psychology majors. Prerequisite, INTRO PSYCH.\*

#### 263. PSYCHOLOGY OF ADOLESCENCE (D)

The development and emotional, social and

intellectual adjustment of the individual during adolescence. Prerequisite, INTRO PSYCH.\*

**265. INTRODUCTION TO THE STUDY OF EXCEPTIONAL CHILDREN (D)**

Emphasis on the etiology, diagnosis, characteristics, education, and prognosis of deviations in mental, physical, and socioemotional development. Prerequisites, INTRO PSYCH\*, PSYCH 262, or permission of instructor.

**270. PERSONALITY (D)**

Introduction to the scientific study of personality. Personality development, structure and dynamics from major theoretical orientations. Prerequisite, INTRO PSYCH\*.

**271. EXPERIMENTAL STUDY OF PERSONALITY**

Selected research projects in personality carried out by class members. Each student conducts one major project of his or her own in addition to the group projects. Prerequisites, PSYCH 140, 145 and 270, which may be taken concurrently. 2 2-hour laboratory periods.

**272. LABORATORY IN PSYCHOPHYSIOLOGY**

The recording and analysis of physiological data from intact human subjects; emphasis on variables mediated by the autonomic nervous system (e.g., skin conductance, heart rate, blood pressure). Students conduct individual projects. Prerequisites, PSYCH 145 or permission of instructor. Some knowledge of basic physiology and electronics strongly recommended. 1 class hour, 1 2-hour laboratory period.

**280. SOCIAL PSYCHOLOGY (D)**

Introduction to the principles and study of social behavior. The psychological factors involved in attitude formation and change, communication and persuasion, and small group processes. Prerequisite, INTRO PSYCH.\*

**281. LABORATORY IN ATTITUDES AND OPINIONS**

Methods and research concerning attitude formation and change, attitude and opinion measurement, communication and persuasion. Prerequisites, PSYCH 140, 145 and 280 or permission of instructor. 2 2-hour laboratory periods.

**282. LABORATORY IN GROUP BEHAVIOR**

Methods and research concerning the behavior of individuals in groups. Interpersonal attraction, social interaction and influence, power and conflict, communication, group structure, leadership, and productivity. Prerequisites, PSYCH 140, 145 and 280, or permission of instructor. 2 2-hour laboratory periods.

**288. INDUSTRIAL PSYCHOLOGY (D)**

Psychological principles underlying personnel

selection and training, communication and decision-making in industry. Prerequisite, INTRO PSYCH.\*

**289. ORGANIZATIONAL PSYCHOLOGY (D)**

Introductory conceptions of schools, hospitals, prisons, industries, and other organizations as complex social systems; individual adaptation in organizational settings; organizational development and personal change. Prerequisite, INTRO PSYCH.\*

**301. EDUCATIONAL PSYCHOLOGY (D)**

Psychological facts and principles of development, learning, and measurement as applied to educational situations. 2 class hours, 1 2-hour laboratory period. Prerequisite, INTRO PSYCH.\*

**305. HISTORICAL AND CONTEMPORARY SYSTEMS (D)**

General structure of psychological theory; analysis and comparison of historical systems in the tradition of British empiricism-associationism and Continental rationalism, and of derivative near-contemporary and contemporary mentalistic, functionalistic, and behavioristic systems. Prerequisite, INTRO PSYCH.\*

**306. COMPARATIVE PSYCHOLOGY**

Emphasis on experimental investigations in a wide range of species. Topics include sensory and physiological systems, learning and early experience.

**311. PSYCHOLOGICAL TESTS**

Survey of tests of intelligence, aptitude, interest, personality, and adjustment. Test rationale, construction, characteristics, uses and evaluation emphasized. 2 class hours. 1 2-hour laboratory period. Prerequisite, INTRO PSYCH.\*

**325. ABNORMAL PSYCHOLOGY (D)**

Etiology, symptoms and therapy of behavior abnormalities including neuroses, psychoses, epilepsies, speech disorders, and mental deficiency. Prerequisite, INTRO PSYCH.\*

**331. CLINICAL PSYCHOLOGY**

Introduction to theoretical approaches and methods used in understanding and treating psychologically disturbed individuals. Prerequisite, PSYCH 325 or permission of instructor.

**345. INTRODUCTION TO QUANTITATIVE THEORIES OF BEHAVIOR (D)**

Introduction to quantification of theories of learning, retention, choice, perception and the interaction of individuals in group situations. Prerequisites, PSYCH 145, and permission of instructor.

**365. THEORIES AND PRACTICE IN COUNSELING**

Theories, techniques and tests necessary in counseling and guidance. Practice in organization and evaluating relevant data in the analysis of illustrative cases. Prerequisite, PSYCH 270, or 311, or permission of instructor. 2 class hours, 1 2-hour laboratory period.

**375. MENTAL RETARDATION**

Introduction to mental retardation; its psychological, sociological, educational, bio-medical, and legal aspects. Half day per week field work. Lecture and discussion group. Prerequisite, INTRO PSYCH.\* (PSYCH 260, 265, or 325 recommended.)

**380. FIELD STUDIES IN MENTAL HEALTH**

Concepts of normality and abnormality studied at local mental health institutions. Topics typically include: structure and dynamics of institutions for the mentally ill, and relationships between concepts of emotional disorder and community mental health services sanctioned to intervene in or regulate behavior. Prerequisite, PSYCH 325. Credit, 4.

**385, 386. SPECIAL PROBLEMS**

For qualified students. Independent work on special problems or in certain fields of psychological interest. By arrangement with members of the department. Credit, 1-6.

**387. READINGS IN PSYCHOLOGY**

Survey of relevant research literature under guidance of a staff member who will direct the student's research problem. Open only to qualified juniors. By arrangement with members of the department. Credit, 1-3.

**391, 392. SEMINAR IN PSYCHOLOGY**

For qualified juniors and seniors. A survey and critical evaluation of the literature pertaining to selected topics in psychology. Many different topics are offered each semester. By permission of the instructors. Credit, 1-3.

**395 (I). HONORS SEMINAR**

For qualified junior psychology majors. Will survey the research areas of psychology represented in the department. Intended for juniors who will work on an honors thesis during their senior year. Credit, 1.

**398. SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

**399. SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.



## Interdisciplinary Programs

### Classics and Philosophy

The Classics and Philosophy major is administered jointly by the two departments. It is designed for classicists with a philosophical bent and philosophers with an interest in Greek.

#### Requirements

- 1) 8 hours of credit in Elementary and Intermediate Greek
- 2) 6 hours of credit in Greek Readings
- 3) 6 hours of credit in Classics
- 4) 6 hours of credit in Philosophy
- 5) 6 hours of credit in Ancient Philosophy
- 6) 6 hours of credit in Special Classics and Philosophy seminars taken in the junior and senior years.

Questions may be directed to Prof. Gareth Matthews, Philosophy Department; and to Prof. Robert Dyer and Prof. John Marry, Classics Department.

### Judaic Studies

To major in Judaic Studies, students must complete the following requirements: a) Hebrew: One year introductory and one year intermediate Hebrew, or equivalent. Two semesters of Hebrew courses numbered 150 or above, or equivalent. b) JUDAIC 100 and 101. c) 18 hours in courses, approved by the Judaic Studies Committee, numbered 200 or above. This requirement is in addition to a) above. d) The major student will devote no fewer than nine of these 18 hours to an area of concentration approved by the Judaic Studies Committee. Six approved areas are: Biblical Studies, History, Hebrew Language and Literature, Modern Literature, Religion, Area Study.

Entering freshmen who may decide to major in Judaic Studies are strongly advised to enroll in Hebrew in the freshman year, thus leaving ample time to complete the required three years of Hebrew; it will also prepare them for a year's study in Israel, which is not required but desirable. In any event, two years of Hebrew satisfy the language requirement of the College of Arts and Sciences.

#### JUDAIC STUDIES

100 (I), 101 (II). THE JEWISH PEOPLE I, II (C)

Selected topics in history, religion, philosophy, art and music, and in the social, economic, and political life of the Jewish people from their earliest origins to the present. Either semester may be elected independently.

200. THE BIBLE AND ARCHEOLOGY (C)

The Hebrew Bible as reflection of ancient Near Eastern cultures and as an historical record; evidence from archeological excavations.

385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the Judaic Studies Committee.

Credit, 1-6.

398. SENIOR HONORS

Senior research, thesis option. By arrangement with the Judaic Studies Committee and/or Honors Office.

Credit, 4

399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with the Judaic Studies Committee and/or Honors Office.

Credit, 1-5.

#### HEBREW

110 (I), 120 (II). ELEMENTARY HEBREW  
Introduction to Hebrew. Two sections, dealing with either Biblical Hebrew or modern Hebrew. 3 class hours, 1 laboratory period.

126. INTENSIVE ELEMENTARY MODERN HEBREW

Intensive introduction to modern Hebrew. 4 class hours, 2 laboratory periods and open laboratory practice.

Credit, 6.

130 (I), 140 (II). INTERMEDIATE MODERN HEBREW

Emphasis on speaking and understanding readings in cultural and literary texts.

146. INTENSIVE INTERMEDIATE MODERN HEBREW

Intensive reading in modern Hebrew. 5 class hours, 1 laboratory period and open laboratory practice.

Credit, 6.

200 (I), 201 (II). MODERN HEBREW LITERATURE (C)

Readings in modern Hebrew writers.

210. READING IN THE HEBREW BIBLE (C)

A careful reading of selected passages from the Hebrew Bible in the original; attention to grammar, syntax, and style. Different passages read each year; may be repeated for credit.

385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with the Judaic Studies Committee.

Credit, 1-6.

#### YIDDISH

110 (I), 120 (II). ELEMENTARY YIDDISH

Introduction to the Yiddish language. 3 class hours, 1 laboratory period.

130 (I), 140 (II). INTERMEDIATE YIDDISH

Emphasis on speaking and on reading various kinds of Yiddish literature.

385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for

qualified students. By arrangement with the Judaic Studies Committee.

Credit, 1-6.

#### Related Courses

ANTH 351. JUDAIC ETHNIC GROUPS

GERMAN 232. GERMAN MASTERPIECES IN TRANSLATION: JEWS IN GERMAN LITERATURE

HIST 341. THE MODERN MIDDLE EAST

POLSCI 233. GOVERNMENTS AND POLITICS OF THE MIDDLE EAST

### Latin American Studies

Undergraduates interested in Latin America may enroll in the Latin American Studies Program. The Program does not constitute a major and is designed to supplement the work done in a regular discipline. However, those students who fulfill the requirements of the Program will be awarded the Certificate in Latin American Studies attesting to their attainment in area and language studies. To earn a certificate a student must enroll in the Program and fulfill either of the two following sets of requirements: Track A: demonstrate a practical working knowledge of Spanish or Portuguese and elementary proficiency in the other; satisfactorily complete four courses focussed on Latin America; and participate in the inter-disciplinary seminar, LAT AM 390; or, Track B: demonstrate a practical working knowledge of Spanish or Portuguese; satisfactorily complete five courses focussed on Latin America; satisfactorily complete LAT AM 390 and 392.

The Committee on Latin American Studies administers the Program and advises interested students. Members of the Committee are: R. Bancroft (Spanish and Portuguese); M. Best (Economics); R.A. Potash, Chairman (History); D. Proulx (Anthropology); H. Wiarda (Political Science); R. Wilkie (Geography).

380 (I, II). FIELD STUDY

Independent study in a Latin American country in accordance with a field experience project drawn up with the advice and approval of a faculty adviser and the Committee on Latin American Studies. Written report required. A scholar in the Latin American country normally is appointed to provide guidance and assistance. Orientation prior to departure is included.

Credit, 3-12.

390 (II). INTERDISCIPLINARY SEMINAR ON LATIN AMERICA

Topics in modern and contemporary Latin America. For Certificate Program seniors and others who have completed at least three courses representing at least two different disciplines on Latin America and have a reading knowledge of either Spanish or Portuguese.



### 392 (I). BIBLIOGRAPHY OF LATIN AMERICAN STUDIES

A survey and evaluation of sources of information about Latin America. Interdisciplinary approach. For Certificate Program students and others with strong interest in Latin America. Reading knowledge of either Spanish or Portuguese required.

## Interdisciplinary Majors in Linguistics

The Department of Linguistics offers five majors in which the study of Linguistics forms a significant part of the curricular requirements. These are:

- Linguistics and Philosophy
- Linguistics and Chinese
- Linguistics and German
- Linguistics and Japanese
- Linguistics and Russian

Students interested in these majors should first see the undergraduate advisor in Linguistics. Students wishing to pursue a joint major in linguistics and other disciplines (for example, Linguistics and English, Linguistics and Psychology, Linguistics and Anthropology, or Linguistics and Computer Science) should also see the undergraduate advisor in Linguistics. Joint majors in these fields have in the past been approved through the Bachelor's Degree with Individual Concentration.

Questions may be directed to Prof. Donald Freeman, Linguistics Department.

## Mathematics and Philosophy

### Requirements

A minimum of 36 semester hours of credit in courses offered in the two departments. Satisfaction of the following requirements of distribution:

- (a) *The Mathemotics Requirement.* Satisfactory completion of MATH 136, 167, and four other courses from among 165 (or 166), and courses numbered above 200, including a two-semester sequence.
- (b) *The Philosophy Requirement.* Satisfactory completion of any three courses from among PHIL 161, 162, 201, 205, 230, and 261. Satisfactory completion of PHIL 374 and one other course numbered above 200.  
COINS 285 may be taken in partial fulfillment of requirement (a) or requirement (b) (but not both).
- (c) *The Logic Requirement.* Satisfactory completion of MATH 381 or both of PHIL 372 and 373. (Note: These courses count toward satisfaction of requirements (a) and (b), respectively.)

For further information, see Prof. Michael Jubien, co-director of the program for Philoso-

phy, or Prof. Frank Wattenberg, co-director for Mathematics.

## Near Eastern Studies

An interdisciplinary and interdepartmental major is offered in Near Eastern Studies. Students majoring (or planning to major) in Near Eastern Studies may consult any of the members of the Near Eastern Studies Committee for help in arranging programs of study. Students in doubt as to which member of the Committee to choose as an adviser should contact Vartan Artinian, the Chief Adviser for Near Eastern Studies majors. The major consists of a minimum of 24 upper level credits in courses chosen from the list below. NEAST 100, 101, Near Eastern Civilization I and II, and 2 years or the equivalent of any Near Eastern language are required. Students should begin the major by taking NEAST 100 and a Near Eastern language course. Those wishing to concentrate in the area of ancient Near Eastern Studies may arrange to study Aramaic, Akkadian, and Ugaritic by signing for a special problems course with Professor Charles Isbell. Majors are urged to spend a summer, a semester, or a full academic year in the Near East. Special problems course may be arranged in the area of the student's particular interest with any member of the Committee.

### NEAR EASTERN STUDIES

#### 100 (I), 101 (II). NEAR EASTERN CIVILIZATIONS (C)

Survey of Near Eastern Civilizations from earliest times to the present. Either semester may be elected independently.

#### 110. ARMENIAN CIVILIZATION (C)

Introduction to the civilization of the Armenian people from earliest times to the present. Emphasis on geography, politics, society and economics, religion, literature and learning, arts and architecture.

#### 200. ANCIENT LITERATURES OF THE NEAR EAST IN TRANSLATION (C)

The most important extra-Biblical texts of the ancient Near East, including compositions of the ancient Sumerians, Egyptians, Hittites, Akkadians, Greeks, Aramaeans, and Ugaritians. Texts include myths, epics, legends, legal texts, historical annals, religious and ritualistic texts, magical formulae, didactic literature, and personal letters.

#### 203. THE BIBLE: MYTH, LITERATURE, AND SOCIETY (C)

The several main genres of Biblical literature in their historical setting; attention to principles of literary, mythological, and sociological interpretation; the literary influence of the Authorized Version. Not open to students who have had ENGL 203.

#### 385 (I), 386 (II). SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the Near Eastern Studies Committee. Credit, 1-6.

### RELATED COURSE:

ENGL 203 (I), (II). The Bible: Myth, Literature, and Society

### ARABIC

110 (I), 120 (II). ELEMENTARY ARABIC  
Introduction to modern standard Arabic. 3 class hours, 1 laboratory period.

130 (I), 140 (II). INTERMEDIATE ARABIC  
Readings in modern standard and classical Arabic.

200 (I), 201 (II). MODERN ARABIC LITERATURE (C)  
Readings in modern Arabic writers.

#### 385 (I), 386 (II). SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the Near Eastern Studies Committee. Credit, 1-6.

### ARMENIAN

110 (I), 120 (II). ELEMENTARY ARMENIAN

Introduction to the Armenian language. 3 class hours, 1 laboratory period.

130 (I), 140 (II). INTERMEDIATE ARMENIAN

Readings in modern and classical Armenian literature.

#### 385 (I), 386 (II). SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the Near Eastern Studies Committee. Credit, 1-6.

### HEBREW

See listings under JUDAIC STUDIES

### PERSIAN

110 (I), 120 (II). ELEMENTARY PERSIAN  
Introduction to modern Persian. 3 class hours, 1 laboratory period.

130 (I), 140 (II). INTERMEDIATE PERSIAN  
Readings in modern and medieval Persian.

#### 385 (I), 386 (II). SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of Near Eastern Studies Committee. Credit, 1-6.

### TURKISH

110 (I), 120 (II). ELEMENTARY TURKISH  
Introduction to modern Turkish. By arrangement.

130 (I), 140 (II). INTERMEDIATE TURKISH Readings in modern and Ottoman Turkish. By arrangement.

385 (I), 386 (II). SPECIAL PROBLEMS Individual study of a selected problem for qualified students. By arrangement with members of the Near Eastern Studies Committee. Credit, 1-6.

#### RELATED COURSES:

The following courses in other departments may be taken for major credit in Near Eastern Studies:

ART 233, 235. Islamic Art and Architecture I and II.

ART 305. Art of Early Mediterranean Cultures.

CLSICS 225, 226. Mythology in the Ancient World I and II.

HIST 200. The Ancient World to 500 B.C.

HIST 340. Civilization of Islam.

HIST 341. The Modern Middle East.

HIST 342. The Ottoman Empire.

POLSCI 233. Governments and Politics of the Middle East.

In addition, courses at Amherst, Mount Holyoke, and Smith Colleges may be taken for major credit in Near Eastern Studies.

#### Pre-Dental, Pre-Medical, and Pre-Veterinary Programs

A student planning to enter a dental, medical, optometry, podiatry, osteopathy, or veterinary school should select a major department in the field of greatest interest. This is usually in the College of Arts and Sciences, but may be in other colleges or schools. Pre-veterinary students frequently select a major in the College of Food and Natural Resources. Preparation for the professional schools requires relatively few specific courses beyond those necessary to obtain the bachelor's degree and can be completed within the four-year curriculum of most departments in the University.

A liberal education is felt to be one of the best backgrounds for entering the medical, dental or other health fields. Although many students may be inclined to concentrate in the sciences, this does not necessarily improve opportunity for entrance into a professional school. Rather, the field of concentration should be determined by the student's strong secondary interests; i.e., he or she should choose that area most likely to lead to a satisfying alternative career.

Minimum preparation for the pre-professional student must include one year of organic, one year of organic, and one semester of analytical chemistry, three semesters of biology, one year of college mathematics, and one year of physics. Certain additional courses in biology, chemistry, or mathematics may be required or recommended by some dental, medical, and veterinary schools. Students

should consult their advisors as well as professional school catalogs in regard to specific requirements of particular schools. Freshmen who intend to include the pre-professional courses in the curriculum should discuss their plans with the summer counseling advisor, as some change in the normal course sequence may be desirable.

Students, who by their work in the first year demonstrate a potential for success, may, in their third semester, apply to the Pre-Professional Advisory Committee for entrance into the pre-medical, pre-dental, or pre-veterinary major. This program is designed to give qualified students the opportunity to broaden their background by providing for increased flexibility in the curriculum of the last two years. These students have advisors specifically for this program, are interviewed, and, upon application to professional schools, are given a written evaluation by the pre-professional advisory committee. However, admission into a pre-medical, pre-dental, or pre-veterinary program in not a prerequisite for application to the professional schools. Many students prefer to complete a full major in an academic department; these students should also apply for entrance into the pre-professional program; they are interviewed and evaluated by the committee in the same manner as those accepted as majors.

A library of dental, medical, optometry, osteopathy, podiatry, and veterinary school catalogs and other pertinent material is maintained in the committee office, Room 206 Goessmann. Students are encouraged to visit this office for further information concerning preparation for careers in dentistry, medicine, veterinary medicine and other health areas.

Individual members of the advisory committee are available for counsel to all interested students at any stage of their program and whether or not they have been accepted into the curriculum as majors. The committee membership for 1975-76 consists of 17 faculty members from Natural Sciences, Psychology, Health Sciences and Food and Natural Resources. Dr. W. Brian O'Connor, Associate Professor/Zoology is the Chairman of the Committee.

#### Science Major

An interdepartmental science major is offered, based on courses in the departments of the Faculty of Natural Sciences and Mathematics (Biochemistry, Botany, Chemistry, Computer and Information Science, Geology, Mathematics/Statistics, Microbiology, Physics/Astronomy, and Zoology). The major is coordinated and administered by a committee composed of the chief undergraduate advisors of these departments, a representative of the Pre-Medical committee, and the assistant dean for Natural Sciences and Mathematics (NS&M). The major is intended for the student who has a broad interest in sciences but does not wish to specialize, and has requirements

in the areas of foundational work, depth, and breadth.

In the foundations area the requirements are: 1) two courses from Math or COINS (Computer and Information Science) or Statistics; 2) two courses from each of Physics and Chemistry plus one more from Physics, Chemistry or Geology; and 3) two courses from the departments of Biochemistry, Botany, Microbiology, or Zoology.

The depth requirement consists of a primary concentration of at least six courses in one department and a secondary concentration of at least four courses in another department in NS&M, with the primary concentration including at least four upper division courses.

To complete the major, the breadth requirement calls for a total of 20 courses chosen from at least six of the nine NS&M departments.

Courses for non-science majors cannot be used to satisfy any part of the Science major, nor can courses taken on a pass/fail basis. Also, courses that are acceptable in the various areas of the requirements depend partly on the primary concentration. For more detailed information contact CASIAC or any member of the coordinating committee.

#### Social Thought and Political Economy

The Social Thought and Political Economy program is an interdisciplinary major for students who want a challenging major that combines related elements of the offerings of the following departments: Anthropology, Economics, History, Philosophy, Political Science, Psychology, and Sociology.

Students choose a concentration either in Social Thought or in Political Economy. Each student is assigned a faculty advisor in consultation with whom he/she selects a program of courses.

#### Requirements

- 12 hours of credit at the introductory level in at least three of the departments listed above;
- 18 hours of credit in courses numbered 200 or above, selected in consultation with the advisor, from the offerings of the departments listed above;
- 6 hours of credit in a two-semester senior year team-taught seminar restricted to the STPEC majors.

Majors with strong academic records are encouraged to write Senior Honors Theses.

For more information, contact Prof. Patrick Eagan, in the Political Science Department.



## Soviet and East European Studies Program

Chairman of Program: Assistant Professor J. Joseph Lake (Slavic).

The Soviet and East European area is viewed in this program from the cooperative perspective of several disciplines. Requirements for the major are:

- 1) Proficiency in a relevant language (normally Russian) at a level adequate to enable the student to conduct research in that language;
- 2) Successful completion of ten courses (including the third year of the language) to be chosen within the area in a minimum of three of the following disciplines: Anthropology, Economics, History, Political Science, Slavic Languages and Literatures, and Sociology;
- 3) Two courses in modern European history.

In addition to those listed above, approximately ten other faculty members in various departments teach courses in the area. Some 35 such courses are presently offered, 15 of them language courses.

Questions may be directed to Professor Lake in 437 Herter Hall; or to Professor Ryavec, Political Science, Thompson Hall.

## Western European Area Studies Program

The Western European Area Studies Program seeks to add scope and depth to the University's liberal arts program. It is not a major concentration, but rather an informal "minor" which complements a wide variety of departmental majors and offers students additional incentive and guidance in creating a meaningful interdisciplinary undergraduate experience.

The requirements for the Western European Studies (WEST) Certificate are: 1) a minimum of one upper-level course in each of three disciplines relating to Western Europe beyond the designated major; 2) at least one interdisciplinary seminar given under the auspices of the WEST program (WEST 291 or 391); 3) a working knowledge of one modern Western European language (normally 18 credits) in addition to English (a reading knowledge of a second foreign language is recommended). These requirements may be met by courses taken at the University, at one of the four institutions in the Five College system, or in one of the overseas programs.

Courses may be chosen from the following areas and departments:

Humanities: Art, Music, History, Philosophy

Language and Literature: Comparative Literature, English, French and Italian; Germanic Languages (includes German, Dutch, Danish, and Swedish), Spanish and Portuguese

Professional Schools: Business Administration, Education

Social Science: Anthropology, Economics, Geography, Political Science, Sociology

Students should select their courses — and design their programs — in consultation with their departmental WEST advisor, who will insure that they meet the requirements for the certificate.

### 291 (I), (II). INTRODUCTORY SEMINAR

An introductory and interdisciplinary seminar focusing on historical and contemporary Western European topics. Broad national and regional issues surveyed; opportunities for student research.

### 391 (I), (II). ADVANCED SEMINAR

An advanced interdisciplinary seminar focusing on specific social, cultural, and political issues in modern Western Europe. Selected topics pursued in depth through extensive individual research. Prerequisites: four courses in the humanities, languages, and/or social sciences with substantial Western European content or permission of instructor.

Credit, 3-4.

George S. Odiorne, Dean; John T. Conlon, Associate Dean; Nelson E. Pion, Assistant Dean

The school offers a number of programs leading to the degree of Bachelor of Business Administration. Students in Business Administration follow a common curriculum during their freshman and sophomore years. This curriculum is composed of:

- RHET 100C and 110C
- MATH 190 and 290
- ECON 103 and 104
- STAT 140 followed by GB FIN 250
- ACCTG 120 and 130
- BA 110
- GB FIN 260 or POLSCI 292
- Three humanities courses
- One course in Social Science
- Four elective courses

Courses and major programs are listed under the four departments in the School of Business Administration: Accounting, General Business and Finance, Management and Marketing. Irrespective of any major selected, a certain "core" of courses is required of all students.

This core is composed of:

- GB FIN 201, Corporation Finance
- MGT 201, Principles of Management
- MKTG 201, Fundamentals of Marketing
- BA 371, Business Policy and Strategy

Elective courses in major programs are selected with the aid and consent of the student's advisor.

## BUSINESS ADMINISTRATION

These courses do not constitute a particular major or concentration within the School of Business Administration.

### 110 (I), (II). INTRODUCTION TO COMPUTERS FOR BUSINESS

The BASIC and FORTRAN computer programming languages. Emphasis on use of the computer for business data processing and problem solving.

### 333. INTERNSHIP PROGRAM

Summer service with a cooperating business firm or governmental agency. Students undertake responsible duties and participate in activities under supervision of experienced executive personnel. Written report required. With permission of department chairman.

### 371 (I), (II). BUSINESS POLICY AND STRATEGY

An integrative case course requiring identification and possible solution of practical problems encountered by general managers who are responsible at various organizational levels for formulating strategies and their successful implementation.



## Accounting

**Chairman of Department:** Associate Professor Anthony T. Krzystofik; Professors Anderson, Backer, Dennler, Lentilhon, Singer; Associate Professors Burch, O'Connell, Simpson, Stone; Assistant Professors Brown, Fitzgerald, Gosman, Horvitz, Motekat, Sardinas, Volkert.

### Curriculum in Accounting:

|                                          |    |
|------------------------------------------|----|
| Required "core" courses                  | 12 |
| Required courses in the major:           |    |
| ACCTG 220, Financial Reporting Theory I  | 3  |
| ACCTG 221, Financial Reporting Theory II | 3  |

A course or courses in at least two of the following three areas:

1. ACCTG 230, Cost Accounting, or ACCTG 235, Managerial Cost Analysis
2. ACCTG 210, Business Applications of Computer, or ACCTG 211, Business Information Systems
3. ACCTG 370, Federal Income Tax Procedures

Electives sufficient to reach a minimum of 24 hours in accounting courses (including ACCTG 120 and 130 but NOT including GB FIN 261, 262, or ACCTG 263).

A Business Law course in addition to the one required in the School core 3

Four elective courses outside the School 12

Additional electives to bring total to the 120 credits required for graduation. Curriculum concentrations exist in the areas of public accounting, management accounting, information systems and areas of special interest. Students planning to satisfy certification requirements as a CPA (Certified Public Accountant), CMA (Certified in Management Accounting), CDP (Certificate in Data Processing) or as a teacher, should consult with a faculty adviser as to the specific requirements.

### 120 (I), (II). INTRODUCTION TO ACCOUNTING I

Introduction to principles underlying the preparation of financial statements.

### 130 (I), (II). INTRODUCTION TO ACCOUNTING II

Continuation of ACCTG 120 with major emphasis on the development and application of accounting data for planning and control.

### 210 (I), (II). BUSINESS APPLICATIONS OF COMPUTERS

Basic business data processing methods with emphasis on general business problems and their application to the COBOL language. Prerequisites, ACCTG 120, 130 and ACCTG 110.

### 211 (I), (II). BUSINESS INFORMATION SYSTEMS

Data processing methods and design of file

structures as they relate to business information systems. Emphasis on the role of the accountant and manager in the design and operation of the systems. Complementary methods of providing information to management for purposes of control, planning, and decision-making. Prerequisites, ACCTG 120, 130 and ACCTG 110 or equivalent. (Also listed as MGT 211.)

### 220 (I), (II). FINANCIAL REPORTING I

Intensive examination of fundamental concepts underlying financial reporting. Current literature dealing with effects of alternative methods upon measurement of periodic income. Prerequisite, ACCTG 130.

### 221 (I), (II). FINANCIAL REPORTING II

Continuation of ACCTG 220 and intensive examination of current authoritative pronouncements on accounting principles. Prerequisite, ACCTG 220.

### 230 (I), (II). COST ACCOUNTING

Methods of cost analysis for job order, process, and standard cost systems, with emphasis on cost control and interpretation. Prerequisite, ACCTG 130.

### 235 (I), (II). MANAGERIAL COST ANALYSIS

Analysis of Cost-Volume-Profit relationships, cost behavior, budgeting and planning, responsibility accounting and control systems, behavioral aspects of budgets, divisional performance evaluation, inventory planning and accounting aspects of capital budgeting. Prerequisites, ACCTG 120, 130 and basic calculus.

### 263 (I), (II). BUSINESS LAW FOR ACCOUNTANTS

Legal concepts and rules encountered in business transactions, with particular attention to subjects currently included in CPA examinations. Prerequisite, GB FIN 260 or permission of instructor. (Also listed as GB FIN 263.)

### 272 (I). ADMINISTRATIVE ACCOUNTING AND CONTROL

Interpretation and evaluation of accounting data for use in managerial decisions of planning and control. Prerequisite, ACCTG 120 or 130. (Not open to students majoring in Accounting.)

### 320 (I), (II). FINANCIAL REPORTING III

Consolidation problems of merged firms, general price-level problems, and problems of foreign operations. Prerequisite, ACCTG 221

### 340 (I), (II). AUDITING

The basic concepts of auditing and control. Emphasizes internal control, audit programs, and professional responsibilities of the CPA. Particular attention to the auditing requirements of the CPA examination. Prerequisites,

ACCTG 221, either ACCTG 230 or 235, Statistics, and a Computer course.

### 360 (II). FUND ACCOUNTING

Special features of budgetary and fund accounting as applied to municipalities, other governmental units and institutions, such as hospitals and schools. Prerequisite, ACCTG 120.

### 370 (I), (II). FEDERAL INCOME TAX PROCEDURE

Federal income tax laws and regulations as they affect individuals; preparation of tax returns. Prerequisite, ACCTG 120

### 371 (I), (II). ADVANCED FEDERAL TAX PROCEDURES

A continuation of ACCTG 370 emphasizing corporations, partnerships, estates and trusts, gifts and estate taxes, tax planning and research. Prerequisite, ACCTG 370.

### 380 (II). CPA PROBLEMS

Extensive practice in solution of problems from CPA examinations. Topics include: proper treatment of assets, liabilities and ownership equity; partnerships; consolidations, funds and cash flow; cost accounting and management uses of accounting information; governmental (fund) accounting; and income taxes. Prerequisite, ACCTG 320.

### 382 (II). INTERNATIONAL ACCOUNTING

Current accounting principles and practices in foreign countries, including their sources and developments; relationships to taxation and auditing standards. Includes accounting problems encountered by multi-national corporations and trends towards the establishment of international accounting and auditing standards. Prerequisite, ACCTG 221 or equivalent, or permission of instructor.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6

### 393 (I), (II). SENIOR HONORS SEMINAR

Advanced study and research on selected topics in Business Administration and related disciplines. Available only to seniors with 2.8 average or better, and/or by permission of instructor. May be taken both semesters.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with the Department and/or Honors Office. Credit, 4

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## General Business and Finance

Chairman of Department: Professor Sidney C. Sufrin, Professors Balintfy, Barges, Corcoran, Hartzler, Kaczka, Ludtke, Osborn, Rivers; Associate Professors: Burak, Plattner, Whiston; Assistant Professors: Abranovic, Branch, Finnerty, Goldman, Kumar, Moore, Zoltners.

### Curriculum in Financial Management

|                                                                                            | Credits |
|--------------------------------------------------------------------------------------------|---------|
| Required "core" courses                                                                    | 12      |
| Required courses in the Major:                                                             | 15      |
| GB FIN 210, Financial Institutions, or ECON 211, Money, Banking and Credit                 |         |
| GB FIN 202, Problems in Business Finance I                                                 |         |
| GB FIN 203, Problems in Business Finance II                                                |         |
| GB FIN 204, Models of Financial Analysis & Management                                      |         |
| GB FIN 220, Investments                                                                    |         |
| GB FIN 230, Principles of Insurance                                                        |         |
| Electives in area of concentration, with a minimum of 9 credits in Business Administration | 18      |
| Electives outside of Business Administration and Economics                                 | 15      |

### Curriculum in General Business

|                                                                                                                      | Credits |
|----------------------------------------------------------------------------------------------------------------------|---------|
| Required "core" courses                                                                                              | 12      |
| Required courses in the major:                                                                                       | 6       |
| GB FIN 210, Financial Institutions, or ECON 211, Money, Banking and Credit                                           |         |
| GB FIN 265, Business and Its Environment                                                                             |         |
| Electives in Business Administration                                                                                 | 12      |
| Electives in Economics beyond introductory course level                                                              | 12      |
| Electives outside Business Administration and Economics with a minimum of 9 credits from a list of selected courses. | 18      |

### Curriculum in Business Administration and Economics

|                                                                                                    | Credits |
|----------------------------------------------------------------------------------------------------|---------|
| Required "core" courses                                                                            | 12      |
| Required Courses in the major:                                                                     |         |
| GB FIN 210, Financial Institutions, or ECON 211, Money, Banking and Credit                         |         |
| ECON 201, Intermediate Microeconomic Theory                                                        |         |
| ECON 214, Macroeconomic Theory and Business Cycles                                                 |         |
| Electives in Business Administration and Economics, with a minimum of 12 credit hours in Economics | 30      |
| Electives outside of Business Administration and Economics                                         | 18      |

### Curriculum in Business Administration and

(Environmental field outside Business Administration and Economics)\*

|                                                                                                     | Credits |
|-----------------------------------------------------------------------------------------------------|---------|
| Required "core" courses                                                                             | 12      |
| Other required courses in Business Administration and Economics (to be selected specifically by the |         |

|                                                                                    |    |
|------------------------------------------------------------------------------------|----|
| student and his or her adviser for each individual program)                        | 6  |
| Electives in Business Administration and Economics                                 | 15 |
| Other Electives (all may be elected from specialized field)                        | 15 |
| Electives outside of Business Administration and Economics and specialized field   | 12 |
| *At least 48 hours must be taken in Business Administration and Economics courses. |    |

### Curriculum in Business Administration with an Area of Concentration in Urban and Regional Studies

|                                                          | Credits |
|----------------------------------------------------------|---------|
| Required "core" courses                                  | 12      |
| Required courses in the major:                           | 21      |
| GB FIN 245, Metropolitan Transportation                  |         |
| GB FIN 270, Real Estate and Urban Development            |         |
| GB FIN 272, Seminar in Urban and Regional Studies        |         |
| ENVDES 272, City Planning History                        |         |
| GB FIN 274, Real Estate Finance                          |         |
| GB FIN 275, Housing Analysis                             |         |
| GB FIN 385/386, Independent Study and Research           |         |
| Electives in Economics, Sociology, and Political Science | 12      |
| Electives in Business Administration                     | 6       |
| Other Electives Outside Business Administration          | 6       |

### Curriculum in Business Administration and Quantitative Methods

|                                                                          |  |
|--------------------------------------------------------------------------|--|
| Freshman Mathematics Requirements:                                       |  |
| Desirable but not required that persons considering this major elect the |  |
| MATH 135, 136 sequence in place of MATH 116, 117.                        |  |

|                                                                                | Credits |
|--------------------------------------------------------------------------------|---------|
| Required "core" courses                                                        | 12      |
| Required courses in the major:                                                 | 12      |
| GB FIN 253, Introduction to Management                                         |         |
| GB FIN 254, Applications of Mathematical Programming in Business and Economics |         |
| GB FIN 255, Decision Models in Business                                        |         |
| GB FIN 273, Introduction to Simulation of Systems Operations                   |         |
| Specialization Electives:                                                      | 24      |
| 12 credit hours from a list of quantitative electives                          |         |
| 12 additional credit hours in Business Administration and Economics            |         |
| Electives outside of Business Administrative and area of Specialization        | 12      |

## FINANCE

### 201 (I), (II). CORPORATION FINANCE

Corporate financial behavior; appraisal of factors affecting decision-making regarding sources and application of funds; introduction to capital budgeting and cost of capital prob-

lem. Prerequisite, ACCTG 125 or permission of instructor.

### 202 (I). PROBLEMS IN BUSINESS FINANCE I

Short- and intermediate-term financing; decision-making under uncertainty regarding needs and sources of funds. Prerequisite, GB FIN 201.

### 203 (II). PROBLEMS IN BUSINESS FINANCE II

Long-term financing, capital budgeting, reserves and dividend policy, pensions, company expansion, merger and consolidation, reorganization. Prerequisite, GB FIN 201.

### 204 (I), (II). MODELS OF FINANCIAL ANALYSIS AND MANAGEMENT

An analytical approach to the study of financial management. Emphasis on theoretical topics of financial decision-making. Through the use of mathematical, statistical and computer simulation methods, various financial decision-making models are made explicit in their assumptions, rigorous in their construction, and testable in their implications. Prerequisite, GB FIN 201 and the SBA required mathematics and computer courses.

### 210 (I), (II). FINANCIAL INSTITUTIONS

The American financial system and functional relationships between financial institutions and economic activities of households, business firms and governmental units. Prerequisites, ECON 125 and ACCTG 125.

### 220 (I). INVESTMENTS

Development of the general theory of investment with emphasis on the individual investor; practical application of the techniques to real world problems.

### 221 (II). THEORY OF INVESTMENT ANALYSIS

Detailed investigation into contemporary investment strategies; emphasis on the theoretical, with portfolio analysis and random walk being the chief topics. Prerequisite, GB FIN 220 or permission of instructor.

### 222 (II). THEORY OF INVESTMENT PROCESSES

In-depth study of portfolio analysis and stochastic processes in security markets; emphasis on quantitative solution techniques and testing procedures. Prerequisites, GB FIN 220 and the required SBA quantitative courses.

### 230 (I), (II). PRINCIPLES OF INSURANCE

Risks encountered by individuals and business firms and methods and institutions which have been established to insure against financial losses. Various forms of insurance are studied primarily from the buyers' point of view.



**231 (I). LIFE INSURANCE**

Application of life insurance to problems of family security, business security, investments, and estate protection.

**232 (I). EMPLOYEE BENEFIT PLANS**

Design and administration of pension; profit sharing, group life and health insurance plans and other miscellaneous insured fringe benefit programs.

**233 (II). PROPERTY RISKS AND INSURANCE**

Methods of protecting against direct and indirect losses from perils of fire, negligence, marine transportation and dishonesty are emphasized. Insurer operational functions of underwriting, claim adjusting, investing and rate making are analyzed.

**234 (I). ECONOMIC SECURITY**

Public and private programs to prevent or alleviate economic insecurity, including poverty, substandard incomes, and economic contingencies. (Also listed as ECON 341.)

**GENERAL BUSINESS****240 (I). DOMESTIC TRANSPORTATION SYSTEMS**

A comprehensive survey of transport agencies. The differential rates of technological development for each mode and the consequential effects on land utilization, methods of rate making, and the formulation of public policy.

**241 (II). LOGISTICS AND THE TRANSPORT FUNCTION**

Problems of inventory determination, plant location, trade-offs, transport alternatives, warehousing, etc. in a systems concept. Case and problem approach.

**242 (II). METROPOLITAN UTILITY SERVICES**

The nature and operation of the public utility services of urban areas such as energy, communications, water, and waste disposal. The public policy being developed, with respect to its impact upon the environment.

**245 (I). METROPOLITAN TRANSPORTATION**

The analysis of economic, social, and technological developments on demand and supply factors for the movement of people and goods within urban areas. Determination of the optimal mix of modal facilities to maximize the total transport resources of the urban area. Coordination of internal and external transport systems. Prerequisite, GB FIN 240 or permission of instructor.

**250 (II). ADMINISTRATIVE STATISTICS**

Probability and statistical distributions applied to business management problems;

application of Bayes' theorem to sampling for business decision-making under uncertainty.

**253 (I). INTRODUCTION TO MANAGEMENT SCIENCE**

The most frequently used methods in modeling and analyzing business and economic problems. The process of abstracting and modeling building, and the role of various types of models in description and decision-making. Methods including general optimization, linear programming, queuing theory, and simulation are used in examining applications from across functional areas of business. Prerequisite, Undergraduate business mathematics core requirements. (Also listed as MGT 253.)

**254 (II). APPLICATIONS OF MATHEMATICAL PROGRAMMING IN BUSINESS AND ECONOMICS**

The use of programming methods in planning and controlling the allocation of scarce resources. Methods include linear programming, integer programming, quadratic programming and dynamic programming. Applications include media selection, sales force allocation, capital budgeting, portfolio selection, work scheduling, and project sequencing. Prerequisite, GB FIN 253 desirable, but not essential. (Also listed as MGT 254.)

**255 (I). DECISION MODELS IN BUSINESS**

Builds upon the foundation of decision theory developed in Gen Bus 250 to develop more advanced methods for the analysis of decision-making under uncertainty. The Bayesian approaches developed are applied using the case method to integrative types of business problems. Prerequisite, GB FIN 250.

**256 (I), (II). ANALYTICAL APPROACHES TO CORPORATE STRATEGY AND PLANNING**

The use of models and analytical techniques to analyze and process business and economic information for the purpose of making strategic decisions about the allocation of resources in an uncertain environment. Focuses not on the development of models, but on the application of a wide variety of existing techniques to medium and long range planning problems. Draws heavily on existing "canned" computer programs to deal with cases from a number of industrial sectors and within the industries across functional areas. The "canned programs" used in analysis of problems include linear programming, forecasting models, and simulation models. Prerequisite, Senior standing in SBA or permission of instructor.

**259 (II). BUSINESS AND ECONOMIC FORECASTING**

Introduction to the uses and limitations and shortcoming of various short term and long term forecasting techniques. Problems

selected from accounting, finance, management and marketing. Techniques include exponential smoothing, input-output analysis, the delphi method, regression analysis, barometric and indicator methods, pools and survey techniques, econometric models, and life cycle analysis. Prerequisite, Upper level SBA standing or permission of instructor.

**260 (I), (II). INTRODUCTION TO LAW**

The nature, functions and limits of law. Various theoretical approaches to law as an important institution in society. Selected problems of law, power and stratification and the relationship of law and values in society. Analysis of the administration of law through legislation, administrative agencies and courts.

**261 (I), (II). ADVANCED LEGAL STUDIES**

An extension and development in detail of topics surveyed in the introductory course. Prerequisite, GB FIN 260.

**262 (II). LAW III**

The economic functions and consequences of agency, partnerships and corporations. Prerequisite, GB FIN 260.

**263 (I), (II). BUSINESS LAW FOR ACCOUNTANTS**

Legal concepts and rules encountered in business transactions, with particular attention to subjects currently included in CPA examinations. Prerequisite, GB FIN 260 or permission of instructor.

**264 (I), (II). LAW OF URBAN DEVELOPMENT**

Legal problems generated by the changing urban environment; includes the law of race relations, poverty and welfare, land use and land use planning, urban and regional planning. Prerequisite, GB FIN 260 or equivalent.

**265 (I), (II). BUSINESS AND ITS ENVIRONMENT**

(See MGT 265.)

**270 (I). REAL ESTATE AND URBAN DEVELOPMENT**

Introduction to principles of urban land use. Economic, legal, social, and political factors that affect real estate markets, valuation and land use.

**272 (II). SEMINAR IN URBAN AND REGIONAL MANAGEMENT**

An overview of the social, economic and political problems of urban America. Also concentrates on the major public finance issues of metropolitan government and explores fiscal and structural alternatives. Urban and regional economic base analysis of several types, through a combination of lectures and group projects.



**273 (I), (II). INTRODUCTION TO SIMULATION OF SYSTEMS OPERATIONS**

The use of computer models to analyze the operation of business and economic systems. Building such models; their inherent limitations. Examines applications from simple machine replacement and scheduling cases to more complex new product planning and media selection cases. (Also listed as I.E. 273.) Prerequisite, GB FIN 253 desirable.

**274 (I). REAL ESTATE FINANCE**

A problem-oriented examination of financial practices, institutions and methods of analysis related to real estate investment. Topics include investment theory, taxation and government programs. Prerequisite, GB FIN 201, 270.

**275 (II). HOUSING ANALYSIS**

An historical perspective of the development of housing markets and programs in the U. S., experience in applying market analysis to housing, and an explanation of government legislation related to housing. Prerequisite, GB FIN 270.

**333. MANAGEMENT INTERNSHIP PROGRAM**

Summer service with a cooperating business firm or governmental agency. The student undertakes responsible duties and participates in managerial activities under supervision of experienced executive personnel. A written report is required. With permission of department chairman.

**335 (I). INVENTORY CONTROL**

Mathematical modeling applied to control of inventory investments. Emphasis is also on the recognition of relevant costs for the development and solution of appropriate models. Prerequisites, proficiency with finite and infinitesimal calculus, probability theory, matrix algebra, computer programming, and operations research methodology, or permission of instructor.

**385 (I), 386 (II). INDEPENDENT STUDY AND RESEARCH**

For qualified seniors, independent study and research on selected problems in Business Administration. With permission of the department chairman. Credit, 1-6.

**391. SEMINAR IN URBAN PROBLEMS**

An analysis of both policy and managerial issues in urban communities, viewed in the context of the contemporary economic and social conditions of such areas.

**393 (I), (II). SENIOR HONORS SEMINAR**

Advanced study and research on selected topics in Business Administration and related disciplines. Available only to seniors with 2.8 average or better, and/or permission of instructor. May be taken both semesters.

**398. SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

**399. SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

**Management**

Chairman of Department: Associate Professor Arthur Elkins. Professors Carlisle, Conlon, Hare, Litterer, McGarrah, Michael, Odiorne, Wortman, Young; Associate Professors Bornstein, Butterfield, Chen, Claunch, Finch, and Sabin; Assistant Professor Bryant; Lecturers Bloodsworth, McAuley.

|                                                                                                                 |         |
|-----------------------------------------------------------------------------------------------------------------|---------|
|                                                                                                                 | Credits |
| Required "core" courses                                                                                         | 15      |
| Required Courses in Major                                                                                       | 21      |
| MGT 214, Personnel Management                                                                                   |         |
| MGT 230, Managerial Behavior                                                                                    |         |
| MGT 231, Administrative Theory                                                                                  |         |
| MGT 247, Production Management I                                                                                |         |
| MGT 265, Business and its Environment                                                                           |         |
| Two Management Electives                                                                                        |         |
| Free Electives, to complement                                                                                   | 24      |
| Management courses, and career and general education objectives. (May include additional management electives.) |         |

**201 (I), (II). PRINCIPLES OF MANAGEMENT**

Introduction to the fundamentals of the management of organizations. Survey includes behavioral background of formal organizational life, organizational design, integrating factors in collective behavior, organizational change, systems analysis, techniques of decision-making and control, the organization and its environment, and the nature of management theory.

**211 (II). BUSINESS INFORMATION SYSTEMS**  
(See ACCTG 211.)

**214 (I), (II). PERSONNEL MANAGEMENT**  
Principles and policies followed by management in recruitment, development, direction, and control of personnel.

**230 (I), (II). MANAGERIAL BEHAVIOR**  
Principles of human behavior in organizations: understanding of one's self as a person and as a manager; development of interpersonal managerial skills. Prerequisite, MGT 201.

**231 (I), (II). ADMINISTRATIVE THEORY**  
Principles of administration, modern organization theories, specialization, functionalization, coordination, planning and control,

authority status, leadership, decision-making, communication, and power-structuring. Prerequisites, MGT 201, 230.

**234 (II). WAGE AND SALARY ADMINISTRATION**

Objectives, procedures, and problems involved in establishment and administration of operative and executive compensation plans. Prerequisite, MGT 214.

**247 (II). PRODUCTION MANAGEMENT I**  
Basic principles of production management. Use of statistical, mathematical, and simulation methods in production or operations.

**248 (I). PRODUCTION MANAGEMENT II**  
Application of principles and analytical techniques to design and operation of production systems. Quality control, inventory and production control. Prerequisite, MGT 247.

**253 (I). INTRODUCTION TO MANAGEMENT SCIENCE**  
(See GB FIN 253.)

**254 (II). TOPICS IN MANAGEMENT SCIENCE**  
(See GB FIN 254.)

**265 (I), (II). BUSINESS AND ITS ENVIRONMENT**

A critical examination of the social, political, technological, and ethical issues confronting the contemporary manager and the modern corporation. Competing concepts of the role of business in society. Prerequisite, junior standing or permission of instructor. (Also listed as GB FIN 265.)

**341 (I). MANAGEMENT DECISION SIMULATION**

Participation in management of a firm in a simulated industry. Students, organized into management teams, apply their knowledge of business administration and economics in a competitive struggle for profit and market position. Prerequisite, senior standing or permission of instructor.

**342 (II). PLANNING AND CONTROL SYSTEMS**

Systems coordinating sales, production, finance, and other business functions and producing information required for adjustment and reformulation of plans over time. Both single-use and continuous-use plans. Design of organization structure and development of control criteria. Prerequisite, senior standing.

**344 (I). MANAGEMENT - UNION RELATIONS I**

Comparison of union-management objectives, functions, and structures, including scope and impact of union penetration into areas of managerial authority. Prerequisite, MGT 201 or 214.

### 345 (II). MANAGEMENT - UNION RELATIONS II

Problems in interpretation and administration of collective bargaining agreements, studied by the case method of analysis. Prerequisite, MGT 344 or permission of instructor.

### 348. INTERNATIONAL MANAGEMENT

A taxonomy of educational, political-legal, sociological-cultural, and economic constraints provides a framework for analyzing management in an international or non-U. S. context. Managerial functions, policy and strategy areas, and current issues are discussed within the context of these constraints.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

### 391 (I). SEMINAR IN ADMINISTRATION

Advanced study and individual research in theory and practice of administrative organization and behavior. Prerequisite, senior standing and permission of instructor.

### 392 (II). SEMINAR IN PERSONNEL MANAGEMENT

Advanced study of current problems in development and administration of personnel problems. Research methodology and recent research findings emphasized. Each student required to complete a major research project. Prerequisite, senior standing and permission of instructor.

### 393 (I), (II). SENIOR HONORS SEMINAR

Advanced study and research on selected topics in Business Administration and related disciplines. Administration and related disciplines. Available only to seniors with 2.8 average or better, and/or by permission of instructor. May be taken both semesters.

### 394 (II). SEMINAR IN OPERATIONS MANAGEMENT

Specialized topics and advanced techniques in production and operations management. Prerequisite, MGT 247.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Marketing

*Head of Department:* Professor Jack S. Wolf. Professors Frederick, Paul, Smith; Associate Professors Barber, Buell, Guiltinan, Johnson, Lander, Monroe, Sawyer, Schwartz, Worthing; Assistant Professor Schewe

### Curriculum in Marketing

Required SBA "core" courses

Credits

12

Required course in the major: MKTG

3

216, Marketing Management

Functional Courses (any two of the following):

6

MKTG 221, Product Planning and Development

MKTG 222, Marketing Communications

MKTG 223, Distribution Channels and Systems

MKTG 224, Analysis for Pricing Decisions

MKTG 225, Sales Management

Tool Courses (any two of the following):

6

MKTG 210, Buyer Behavior

MKTG 212, Marketing Research

MKTG 214, Marketing Models

Expansive Courses (any one of the following):

3

MKTG 213, Advanced Marketing Research

MKTG 219, Marketing Strategy

MKTG 237, International Marketing

MKTG 391, Seminar in Marketing

MKTG 385-6, Independent Study and Research

One Advanced Behavioral Science Elective

3

One Advanced Economics Elective

3

Total Program Credits

36

Free Elective Credits

24

### 201 (I), (II). FUNDAMENTALS OF MARKETING

The role of marketing in our economic and social structure. The planning, distribution, pricing and promotion of goods and services to consumer and industrial markets.

### 210 (I), (II). BUYER BEHAVIOR

Analysis of buyer motivation and buying behavior. Explanatory theories of consumer market behavior and models of the decision-making process for winning patronage. Prerequisite, MKTG 201 or permission of instructor.

### 212 (I), (II). MARKETING RESEARCH

The systematic gathering, recording and analyzing of data about problems relating to the marketing of goods and services. Individual case study and research projects. Prerequisites, MKTG 201 and STAT 140 permission of instructor.

### 213 (II). ADVANCED MARKETING RESEARCH

Select areas of marketing research. Substantive problems of experimental research and research design and analysis. Class problems consist of laboratory or field experiments. Prerequisite, MKTG 212, or permission of instructor.

### 214 (I), (II). MARKETING MODELS

Relates a number of concepts and techniques to the analysis and solution of marketing management problems. Marketing models as aids to decision-making in marketing. Prerequisite, MKTG 201 or permission of instructor.

### 216 (I), (II). MARKETING MANAGEMENT

An advanced understanding of the nature and problems of marketing management: the environments facing the marketing manager, and the tools available for environmental analysis and control of marketing activities. Prerequisite, MKTG 201 or permission of instructor.

### 219 (I), (II). MARKETING STRATEGY

Exposure to realistic problems through computerized simulation or analysis of cases. Practice in seeking solutions to marketing problems through an integration of factors pertinent to strategy development. Prerequisite, senior standing or permission of instructor.

### 221 (I), (II). PRODUCT PLANNING AND DEVELOPMENT

Examination and analysis of the factors pertinent to effective product decisions by marketing managers. The organization of the products and markets, and methods for reducing new product risk. Prerequisite, MKTG 201 or permission of instructor.

### 222 (I), (II). MARKETING COMMUNICATIONS

Development effective marketing communication strategies based upon an understanding of the characteristics of audiences. Conceptual material from communications theory applied to advertising and other promotional problems. Prerequisite, MKTG 201, or permission of instructor.

### 223 (I), (II). DISTRIBUTION CHANNELS AND SYSTEMS

A systems approach to the management of all activities that facilitate the movement of goods and coordination of supply and demand. Prerequisite, MKTG 201 or permission of instructor.

### 224 (II). PRICING METHODS AND DECISIONS

Surveys the demand, cost, competitive, and legal determinants of price. Emphasis on the demand determinants of price including how buyers price in their purchasing decisions. Prerequisite, MKTG 201 or permission of instructor.

### 225 (II). SALES MANAGEMENT

The management of the personal selling function at field, intermediate and top levels. Topics include planning; time and territory management; supervisory functions; and control. Prerequisite, MKTG 201 or permission of instructor.



## School of Education

### 237 (I). INTERNATIONAL MARKETING

Background useful to United States business enterprises which market goods and services in foreign countries. Emphasis on the multinational firms, marketing operations and the design of marketing strategy. Prerequisite, MKTG 201 or permission of instructor.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. *Credit, 1-6.*

### 391 (II). SEMINAR IN MARKETING

Advanced study and individual research on selected problems and current issues in marketing. Each student completes a major research project. Prerequisite, senior standing or permission of instructor.

### 393 (I), (II). SENIOR HONORS SEMINAR

Advanced study and research on selected topics in Business Administration and related disciplines. Available only to seniors with 2.8 average or better, and/or by permission of instructor. May be taken both semesters.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. *Credit, 4.*

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. *Credit, 1-5.*

### RELATED COURSES:

ACCTG 272 Administrative Costing and Control

GB FIN 241 Management of Traffic and Physical Distribution

GB FIN 253 Introduction to Management Science

MGT 265 Business and Its Environment

MGT 342 Planning and Control Systems

*Acting Deon:* Louis Fischer. *Acting Associate Deon:* Grace J. Craig. *Assistant Deon for Graduate Affairs:* Norma Jean Anderson. *Assistant Deon for Teacher Education:* Richard J. Clark. *Acting Director of Administration:* Karl W. Broekhuizen.

Professors Allen, A. Alschuler, E. Anderson, Anthony, Blanchard, Cappelluzzo, Carew, Ertel, Fredrickson, Gentry, Ivey, Jones, Jordan, Kornegay, Olim, Reed, Schimmel, Scribner, Seidman, Simon, Ulin, Viera, Weinstein, Wellman, Wolf, Woodbury, Wyman; Associate Professors Bunker, Coffing, Damerell, Day, Eddy, D. Evans, Eve, Fanslow, French, Griffiths, Hambleton, Hutchinson, Jarvesoo, Konicek, Lauroesch, Quilling, Rudman, Schultz, Schuman, Sims, Sinclair, Speidel, Sullivan, Suzuki, Thelen, Thuemmel, Turner, Urch, E. Washington, K. Washington, White; Assistant Professors Adams, L. Blane, Brandon, Bryniawsky, Caban, Campbell, Collard, Dye, Eisman, Elliott, Erickson, J. Evans, Flight, Forman, Gluckstern, Gorth, Gourley, Greene, Greenebaum, Hall, Hruska, Karlson, Lawson, Love, Mackin, Masalski, Melnik, Mills, Miltz, Nieves, Nuttall, Peelle, Raman, Reichmann, Sheehan, Streets, Swaminathan, Wagschal, Wideman, Wuertner; Lecturers I. Alschuler, Blain, Batchelder, Carney, George, Jackson, Kamin, Lamb, McGowan, Martin, Navon, Qamar, Ramsey, Russell; Instructors Dumas, Heide, Patrie.

Adjunct Faculty: Professors Edelman, Giladi, Hurst, Locke, Tippo, Venman; Associate Professors Atwell, Beals, Burn, T. Clark, Gulko, Lockwood, Schumer; Assistant Professors Bean, S. Blane, Daniels, Delaney, Forsyth, Higgins, Keochakian, Kraus, Martin, Preston, Royer, Stanton, White; Lecturer Harris.

Freshmen interested in becoming Education majors are initially admitted to the University as Pre-Education majors. Students interested in becoming Education majors, and other students interested in receiving teaching certification through the School of Education, should take the introductory course "Kids, Schools and the School of Education," in their freshman year.

The School of Education provides students a variety of alternatives. Revision and re-evaluation of curriculum and structure is continual; therefore, some new programs may not be included in the following information.

The following are School of Education policies and procedures pertaining to undergraduates:

#### I. The Education Major

A. There are two types of Education majors:

1. Students enrolled in Teacher Education Council programs, usually on the elementary level.
2. Non-teaching majors.

#### B. The requirements of the Education major:

##### 1. Teacher preparation

- a. Completion of the University core requirements.
- b. Completion of 27 additional credits in Arts and Sciences.
- c. Completion of at least 30 credits in Education.
- d. Completion of the course "Kids, Schools and the School of Education: An Introduction."
- e. Acceptance by and completion of a Teacher Education Council (TEC) program.
- f. Maintenance of a minimum 2.0 cumulative average.
- g. Have at least 15 graded credits in residence at the University.
- h. May not use more than 45 credits in Education toward the bachelor's degree, without prior approval.

##### 2. Non-teaching major

- a. Must complete a,b,c,f,g, and h, of Teacher Preparation requirements.
- b. Must have faculty sponsor and cluster approval for program which includes at least 30 credits in Education.
- c. Program outline, with signatures of faculty sponsor and cluster chairperson, must be submitted to the Education Advising Office for final approval.
- d. May not seek certification; may not student teach.

#### II. Organization of the School of Education for Undergraduates

- A. All students who are interested in becoming Education majors are the responsibility of and are responsible to, an advisor assigned by the Education Advising Office, located in 125B School of Education. The staff of the EAO are the advisors for these students. This and the "Kids" course are usually students' first contacts with the School of Education.
- B. Students seeking elementary teacher certification must enter a TEC program. This usually occurs between the end of the third semester and the fifth, depending upon the program, and can only be done after a student has completed the course "Kids, Schools, and the School of Education: An Introduction." Once a student enters a program,



the program staff becomes the advisor for the student, and will remain so until the student graduates or enters another program.

- C. Students seeking secondary certification are usually not Education majors. They, in most cases, should be earning degrees in academic majors. Upon receiving the approval of their major departments, they are eligible to apply for entrance into a TEC program.
- D. Students seeking a non-teaching major must design a program of at least 30 credits in conjunction with a faculty sponsor and with the approval of the cluster in which the student and his or her sponsor are concentrating. The program of study must be approved by the Education Advising Office for the Dean for Teacher Education.

### III. Course Requirements

- A. All Education majors seeking certification must complete the course "Kids, Schools, and the School of Education: An Introduction" or its equivalent.
- B. Students seeking certification must complete a TEC program.
- C. A \$30.00 Practice Teaching Fee will be collected from all students who practice teach in TEC programs.

### IV. Grades

- A. All School of Education courses are Pass/Fail. No undergraduate may receive a letter grade in an Education course.
- B. Transfer students must earn at least 15 graded credits in residence at the University. At least 6 credits should be taken for letter grades during the first semester of residence to establish a cumulative average.
- C. All students must have a cumulative average of at least 2.0 to be eligible for a TEC program.

### TEACHER EDUCATION PROGRAMS

The Teacher Education Council (TEC) is responsible for the School's undergraduate and graduate teacher preparation programs. The Council's major focus is on creating new options and alternative routes for meeting undergraduate degree and certification requirements. The Council presently sponsors more than 15 programs which have different goals, approaches, lengths, and admissions criteria. All programs include a clinical experience. Specific information on individual programs is available from the School of Education Advising Office in 125B, School of Education. Following is a list and short description of representative teacher education programs.

**Elementary Certification.** Typically, students earning an elementary teaching certificate are majors in the School of Education. The School offers a variety of elementary teacher prepa-

ration programs from which the student may choose. Some examples of these alternatives, followed by their cluster abbreviation, are:

**AMHERST-PELHAM ELEMENTARY —** A wide range of practical alternatives for elementary majors. The program has various entry and exit points, and works in the Wildwood, Pelham and Fort River schools. (DEPM)

**ANISA —** An intensive two-year program offering prospective early childhood teachers a comprehensive theoretical approach to teaching designed to foster maximum development in children. (DEL)

**EARLY CHILDHOOD EDUCATION —** A two-year program focusing on education and related services for children and their families during the child's first eight years. It emphasizes a broad social-science base with particular attention to the psychological, sociological and biological perspectives on human development. At least two student teaching experiences are incorporated into the program to integrate theory and practice. There are various areas of specialization within the program. (EPS)

**INTEGRATED DAY TEACHER EDUCATION PROGRAM (INTEP) —** A two-semester sequence open to elementary majors providing those competencies necessary to function effectively in integrated day classrooms or any educational setting where active learning is emphasized. (DEL)

**Secondary Certification.** Students seeking secondary certification are usually not Education majors. In most cases they are earning degrees in academic majors reflecting the subjects they wish to teach. Secondary students earn their certification by completing a secondary program. Some examples of current secondary programs, and their cluster abbreviations, are:

**ENGLISH EDUCATION —** A joint program with the English Department in the College of Arts and Sciences. All students desiring secondary certification in English do their student teaching through the English TEC program in the School of Education. Entrance into the program is based on selection by the English Education Committee, College of Arts and Sciences. (TD)

**PERSPECTIVES IN INTERDISCIPLINARY EDUCATION —** Designed for academic majors and BDIC students interested in interdisciplinary and interpersonal learning. Open to both undergraduate and graduate students. (TD)

**SECONDARY MATHEMATICS —** A program for mathematics majors seeking to become secondary school mathematics teachers. Admission is by joint approval of the Education Advisors in the Department of Mathematics and Statistics and the Secondary Mathematics Program Advisors in the School of Education. (DEL)

**SECONDARY SCIENCE AND SOCIAL STUDIES —** A one-year program designed for students from other academic departments who wish to prepare for a career as either a secondary science or social studies teacher. (DEPM)

**Elementary or Secondary Certification.** A number of programs are concerned with grades K-12. They lead to elementary certification for Education majors and to secondary certification for majors in other discipline areas. Some examples are:

**EDUCATION FOR A CHANGING WORLD —** A program whose broad objective is to prepare elementary and secondary teachers to educate their students with skills and values appropriate to a rapidly changing world. Following an introductory course, each student decides on an area of emphasis — Environmental, Education, International Education, Global and Future Studies, or some combination of these areas. (EPS)

**EXPLORATIONS! —** For those with the self-direction to design their own curriculum, learning environment and teaching experiences. Explorations! is a wholly contained one-year program leading to either elementary or secondary certification for students who want to be totally responsible for making their own choices. (HAPPS)

**OFF-CAMPUS —** Elementary and secondary students practice teach in schools as far away as California and England, working with innovations such as differentiated staffing, flexible scheduling, integrated day, open classroom. (DEL)

**URBAN EDUCATION (CUETEP — Center for Urban Education Teacher Education Program) —** Prepares elementary or secondary teachers to have, in addition to concepts and skills relating to learning theory, the political sophistication necessary to become reform strategists. The program is flexible, with multiple entry and exit points. (DEL)

**Specialized Certification.** The School of Education has a number of programs that prepare students for specialized areas. Programs currently in operation are:

**COOPERATIVE EDUCATION** — For secondary teaching candidates interested in the growing field of cooperative education; that is, working with high school students who spend half their time in classroom learning and half in work/learning experiences in hospitals, business offices, museums, and other community services. (DEPM)

**AGRICULTURAL EDUCATION** — For students with a major in the College of Food and Natural Resources interested in becoming vocational agricultural teachers. Combines practical experience and professional education. Student teaching sites throughout Massachusetts. (DEPM)

**SPECIAL EDUCATION** — Prepares selected prospective teachers at the B.A. level to serve as Classroom Based Diagnostic Resource Teachers (CBDRT) in an innovative, non-categorical role. The CBDRT is a specifically trained special educator with skills in determining the needs and strengths of children perceived as having learning and/or behavior problems, in assessing the resource available, and in facilitating optimum utilization of the regular classroom environment to successfully provide positive learning and growth experiences for such children. (TD)

**BILINGUAL/BICULTURAL EDUCATION PROFESSIONS** — An intensive two-year program for students committed to bilingual/bicultural education. Features laboratory and clinical experiences in the community and the classroom prior to elementary certification. (TD)

**Non-Certification Programs.** The Teacher Education Council also sponsors programs not leading to certification. A current example is:

**HUMAN SERVICES** — Designed to train undergraduates in new and effective ways of educating people in institutional settings other than schools, including prisons, mental hospitals, community mental health centers, detention centers, and state agencies. Emphasis on on-site training and experiential learning. (HAPPS)

#### **LEARNING EXPERIENCES**

The following offerings, by cluster, are open to students throughout the University. Additional courses are available to students enrolled in specific TEC programs.

#### **DESIGNS FOR EFFECTIVE LEARNING (DEL)**

##### **205. AESTHETICS ELEMENTS IN THE TEACHING-LEARNING PROCESS**

To enable teachers to increase their creativity and to use the arts in the classroom through

improvisation workshops, discussions, readings and curriculum projects.

##### **257. INTRODUCTION TO URBAN EDUCATION**

Discussion groups survey urban and suburban schools, discuss the process of learning in urban classrooms, study the effects of the present curriculum, and survey various innovative techniques as they apply to urban schools.

##### **259. PRINCIPLES AND METHODS IN TEACHING ELEMENTARY SOCIAL STUDIES**

Evaluation of various state, commercial and project social-studies curricula in terms of instructional strategies. Practical experience in creating a social studies unit.

##### **260. THE ELEMENTARY SCHOOL CURRICULUM**

The content and methodology of the elementary school curriculum. Emphasis on the unit method and activity programs. Prerequisites, electives in Foundations of Education and Child Psychology, Educational Psychology, or Human Development.

##### **261. PRINCIPLES AND METHODS IN TEACHING READING AND LANGUAGE ARTS IN THE ELEMENTARY SCHOOLS**

Approaches to the teaching of reading and language arts in the elementary schools. Innovations in methods and materials.

##### **262. PRINCIPLES AND METHODS IN TEACHING ELEMENTARY SCIENCE**

Aid in preparing pre-service students for teaching science in elementary schools. Methods, materials, and latest curriculum work.

##### **263. PRINCIPLES AND METHODS IN TEACHING ELEMENTARY MATHEMATICS**

Introduction to the structure of mathematics, and to the role, methods, material, and curricular aspects of mathematics education in the school.

##### **268. CURRICULUM DEVELOPMENT IN URBAN EDUCATION**

Student development of new and innovative curricula for urban schools and investigation of what kinds of curriculum development are relevant to inner-city environments. A post-urban internship consisting of lectures, seminars and field experience.

##### **272. TEACHING READING TO SPECIAL POPULATIONS K-12**

Approaches to the teaching of reading to such special populations as the disadvantaged, the gifted, and the emotionally disturbed, with stress on the individualized and experience approaches. One group studied intensively.

##### **317. INTRODUCTION TO COMPUTER USE IN TEACHING**

To introduce novices to uses of the computer in the teaching/learning process.

##### **318. INSTRUCTIONAL APPLICATIONS OF COMPUTERS**

Each student proposes, designs, develops, implements and documents a unit of computer-assisted instructional material.

##### **330. ECONOMICS OF EDUCATION**

An introduction to economists' approaches to education as an investment in human capital. Review of the literature and discussion of issues raised by such a general view of education.

##### **332. PRINCIPLES OF EDUCATIONAL AND PSYCHOLOGICAL TESTING**

Basic principles of measurement. Topics include descriptive statistics, reliability, validity, principles of test-construction, item analysis and a review of standardized tests.

##### **361. SCIENCE EDUCATION IN THE ELEMENTARY SCHOOLS**

For teachers or other interested persons who wish to bring their knowledge of methods, materials, and curriculum up to date. Laboratory approach.

##### **371. URBAN COMMUNITY RELATIONS**

The interrelationship of inner-city communities and established power within the school system, community control, participation, and decision-making in education and development of alternatives in power relationships. Lecture, discussion and field experience.

#### **DIVISION OF EDUCATIONAL PLANNING AND MANAGEMENT (DEPM)**

##### **216. EVALUATION MODELS**

Seminar utilizing the writings of Cuba, Stufflebeam, Stake, Pace, Serevin, Bloom, and Hammond. Emphasis on philosophies of evaluation, variables employed in the various models, and the generation of new evaluation designs.

##### **217. LEARNING SYSTEMS DEVELOPMENT**

For educational specialists, administrators, and classroom teachers. Procedures for developing instruction that meets student needs, including techniques of accountability, individualizing instruction, using instructional objectives, and evaluation techniques.

##### **218. RESEARCH METHODS IN EDUCATION**

An interdisciplinary course on research methods and scholarship in psychological, sociological, economic, political, historical, and philosophical studies of education. Prerequisite:



sites, study in a discipline and permission of instructor.

**231. ISSUES IN FREEDOM AND RESTRAINT IN ACADEMIC POLICY**

The sociological, philosophical, economic and anthropological considerations found in freedom and restraint conflict, via readings in periodicals and discussions.

**232. STUDENT REVOLUTION AND CURRICULUM CHANGE**

Sources, mechanisms, and consequences of social and cultural change; analysis of theories of change and of important theoretical studies in that area. Limited enrollment.

**233. EDUCATIONAL LAW**

Introduction to the legal aspects of public education including rights and liabilities of school boards, teachers, and pupils; attention to recent legal interpretations.

**284. ORGANIZATION AND ADMINISTRATION OF A DISTRIBUTIVE EDUCATION PROGRAM**

Activities necessary to initiate, maintain, and improve a Distributive Education Program. Organization and administration at the secondary level.

**286. ORGANIZATION AND ADMINISTRATION OF A COOPERATIVE EDUCATION PROGRAM**

Organization and administration of the Cooperative Education Program at the secondary level. Those activities necessary to initiate, maintain and improve Cooperative Education.

**287. VOCATIONAL ADULT EDUCATION**

Organization and administration of vocational adult classes; the interrelationships between secondary and adult education.

**288. DIRECTED OCCUPATIONAL EXPERIENCES (INTERNSHIP PROGRAM)**

Eight weeks of directed occupational experiences in each of the three major fields of distribution (retail, wholesale, service) planned individually by student, cooperating business, and vocational-technical education staff prior to enrolling. Credit, 2-4

**289. METHODS AND MATERIALS FOR DISTRIBUTIVE EDUCATION**

Securing, evaluating, organizing, and presenting instructional materials and experiences. For prospective distributive-educational personnel. Credit, 2.

**310. PRINCIPLES AND METHODS IN TEACHING SOCIAL STUDIES IN THE SECONDARY SCHOOLS**

Possible goals and strategies for secondary-

school social-studies instruction, to help develop a defensible rationale for teaching. Primarily a preservice offering.

**312. PRINCIPLES AND METHODS IN TEACHING SECONDARY SCIENCE**

The nature and content of science, learning strategies, and values of self and society, to help the preservice science teachers formulate their own philosophy and rationale for education in science.

**324. DESIGN AND MANAGEMENT OF SCHOOL INFORMATION SYSTEMS**

Systems analysis, problem definition, hardware selection, site preparation, systems design, staff selection, information collection and display, programming and procedure documentation standards, and user-training for various types of information systems. Concurrent internship in an appropriate school information center expected. Prerequisite, knowledge of computer programming.

**333. INTRODUCTION TO RESEARCH FOR NON-RESEARCH MAJORS**

Purposes of research, different kinds of research (i.e., historical, survey, and experimental models), and specific research methodology (drawn from statistics, experimental design, and measurement and evaluation).

**355, 356 (I), (II). INTRODUCTION TO STATISTICS AND COMPUTER ANALYSIS**

Elementary descriptive statistics, control of the computer terminal inferential statistics, and some programming concepts with a computer language (FORTRAN) for unique solutions of problems. First semester (or permission of instructor) prerequisite for second semester.

**358, 359 (I), (II). INTRODUCTION TO SCHOOL ADMINISTRATION**

Introduction to each of the many disciplines on which an administrator calls. Members of the faculty of the University and the Five Colleges lecture on their own disciplines.

**372. PRINCIPLES AND PRACTICES IN VOCATIONAL EDUCATION**

Secondary and post-secondary programs and the relationship of vocational education to the total educational program.

**373. APPRENTICE TEACHING IN AGRICULTURE**

A full year (in absentia) teaching agriculture, horticulture, and related subjects under a supervising teacher in a selected school. Credit, 6.

**375. METHODOLOGY AND MATERIALS FOR TEACHING IN OCCUPATIONAL EDUCATION**

A seminar approach to special methodology in

occupational education. Content based on experiences of students in teaching. Laboratory section in Microteaching. Credit, 1-4.

**376. PREPROFESSIONAL LABORATORY EXPERIENCE IN OCCUPATIONAL EDUCATION**

Teaching experience in occupational education programs, including directed observation of instructional activities, teaching individuals and conducting occupational placement, and/or off-farm instruction. Credit, 1-4.

**DIVISION OF HUMANISTIC APPLICATIONS OF SOCIAL AND BEHAVIORAL SCIENCES IN EDUCATION (HAPPS)**

**220. HUMAN RELATIONS LABORATORY**  
For prospective elementary teachers with several basic skills in human relations. Teacher trainees participate in exercises in attention, flexibility, and decision making in human relations.

**221. STRENGTH TRAINING**

A way of working with teacher, counselor, and administrator performance through simulation and videotape feedback. Stress on what kind of school the personnel project to their students. School personnel (pre- and in-service) are taught to evaluate the responses, feelings, and perceptions of students. A laboratory course with assigned readings. Three class hours. Prerequisite, student teaching.

**222. THE EDUCATION OF THE SELF**

Educational strategies for increasing self-knowledge. A laboratory approach to those processes, concepts, and skills leading toward self-observation, pattern clarification, and the development of personal designs for response-experimentation are pursued. Journals and final papers. Prerequisite, permission of instructor.

**277. PRINCIPLES OF SCHOOL GUIDANCE**

The nature of guidance and its need in the schools. An overview of an adequate guidance service for a school system.

**378. PRACTICUM IN HUMANISTIC CURRICULUM DEVELOPMENT**

Models for the development of humanistic curricula. Students employ one or more models in writing their own curricula, and in evaluating their efforts. Prerequisite: EDUC 222.

**379. VALUE CLARIFICATIONS FOR TEACHERS**

To help teachers clarify their own values and how these values affect their students in and out of the classroom.



## EDUCATIONAL POLICY STUDIES (EPS)

### 225. EDUCATION IN AFRICA

Major trends in education on the developing African continent. Emphasis on the changes since independence. The impact of cross-cultural forces at work in education.

### 226. CURRICULUM DEVELOPMENT IN INTERNATIONAL EDUCATION

The resources and concepts of curriculum development in international education. Students develop units that can be taught in elementary or secondary schools.

### 228. LABORATORY IN CROSS-CULTURAL STUDIES

To develop a sensitivity to cultural differences by examining the elements of cross-cultural communication in an educational context. Primarily for teachers and those working in other educational fields. Experientially based (employing field work, role-playing, and gaming), and balanced by analytical readings, discussions, and independent study. Fulfills "Foundations" requirement for students seeking Teacher Certification.

### 229. INTERNATIONAL EDUCATION

An introduction to certain portions of international education. The issues surrounding education as a tool of development, education in a cross-cultural context, and education through international exchange of persons and ideas. Substantial foreign-student participation. Readings, class discussion, learning games, and individual study projects. Fulfills "Foundations" requirement for students seeking Teacher Certification.

### 242. CONTEMPORARY EDUCATIONAL PHILOSOPHIES

Critical examination of selected contemporary philosophies of education. Attention to social implications and to relevance to educational practice. Fulfills "Foundations" requirement for students seeking Teacher Certification.

### 243. DESIGNING AND CONDUCTING ACTIVITIES TO HELP ADOLESCENTS DEVELOP AND LIVE BY THEIR VALUES

How to design and conduct classroom activities that when carefully sequenced can help adolescents develop and live by their values.

### 245. METHODS OF STIMULATING THE EXPLORATION OF VALUES

Various ways of utilizing group dynamics methodology to stimulate value exploration of psychological issues and social issues confronting contemporary youth, such as drugs, race and sex.

### 250. CONCEPTIONS OF LIBERAL EDUCATION

Traditional and modern conceptions of liberal

education; their relevance to contemporary societies and education.

### 251. FOUNDATIONS OF EDUCATION

Selected problems and issues in modern education studied through the discipline of educational sociology, educational history, educational philosophy, comparative education, or social psychology. Independent study of field experiences optional. Possible foci are educational aims, societal expectations of the schools, church-state relations, professionalism, academic freedom, curriculum and methodological emphasis, urban education, and educational innovation. Fulfills "Foundations" requirement for students seeking Teacher Certification.

### 254. EDUCATIONAL ANTHROPOLOGY

Relevant concepts from cultural anthropology (such as change, human behavior and interaction, and cultural determinants within American culture) applied to education. The culture of the schools and the role of the subculture in the culture as a whole.

### 265. EDUCATING THE DISADVANTAGED CHILD

The issues and problems in educating disadvantaged children. Emphasis on urban elementary education; rural education problems also addressed.

### 290. OBSERVATIONAL TECHNIQUES IN EARLY CHILDHOOD EDUCATION

Observation of early childhood educational programs of various kinds serving disadvantaged as well as middle-class children. Four laboratory hours per week during the first four weeks of the first semester. Credit, 1.

### 291. EARLY CHILDHOOD EDUCATION MOVEMENT

Contemporary purposes, programs, and problems of early childhood education, from an historical and philosophical perspective. A one-semester graduate seminar. Meets state requirements for Teacher Certification.

### 292. SEMINAR IN CURRICULUM DEVELOPMENT FOR EARLY CHILDHOOD EDUCATION

Curriculum components for children in early-education programs designed to follow each field-teaching experience. Limited to students specializing in early childhood education.

### 293, 294 (I), (II). LABORATORY COURSE ON USING HUMAN DEVELOPMENT KNOWLEDGE IN EDUCATION

Parallels field-teaching experiences for students concentrating on early childhood education. Factors such as sex, environment, social status, and culture in relation to growth rates and patterns. Data from the community in which each teaching experience takes place.

### 295. ADVANCED SEMINAR IN LANGUAGE DEVELOPMENT IN EARLY CHILDHOOD EDUCATION

The relationship between language and thought. Emphasis on contemporary language development programs in early childhood education. An analysis of linguistics.

### 298. THE INDIVIDUAL AND ORGANIZATION OF HIGHER EDUCATION

Analysis of the effects of institutional and organizational structure and values on individual development.

### 299. ALTERNATIVE STRUCTURES IN HIGHER EDUCATION

Review and analysis of organizational structures of institutions of higher education; design of alternative models for governance and learning. Credit, 4.

### 319. EDUCATION AND PUBLIC POLICY

Selected issues and problems concerning the interaction between education and politics at the local, state, and national levels.

### 333. EDUCATION IN ASIA

The relationship between education and society in the major nations of the Far East. The process of change in educational thought and institutions; the conflict between tradition and contemporary forces.

### 365. EDUCATION IN LATIN AMERICA

The developmental history of the educational structures and systems of Latin America. Emphasis on the effectiveness of the various educational models. Analysis of related case studies.

### 366. EDUCATION AND DEVELOPMENT

The relationship between the development of national and regional areas of education. Systems analysis introduced; areas for potential research projects identified.

### 368. EDUCATIONAL PATTERNS AROUND THE WORLD

The processes and problems of educational development in selected areas throughout the world; the interrelationship between education and cultural forces.

### 369. PRACTICUM IN INTERNATIONAL EDUCATION

Supervised practical experience in various areas of international education. Credit, 1-6.

### 387. SPECIAL PROBLEMS IN INTERNATIONAL EDUCATION

Independent work on special problems or in certain areas of international education. Credit, 1-6.

TRANSDISCIPLINARY EDUCATION (TD)

227. CURRICULUM DEVELOPMENTS IN MUSIC AND SOUND IN EDUCATION  
A survey of methods, materials, techniques, and problems related to the innovative use of music and sound in the classroom as an aesthetic medium for enhancing learning of all kinds. Development of experimental innovations and their applications.

230. CURRICULUM INNOVATIONS IN MOVEMENT AND DANCE IN EDUCATION  
A survey of methods, materials, techniques, problems, and relevant research literature, related to the use of movement and dance in the classroom as an aesthetic medium for enhancing learning of all kinds. Experimental application of innovations developed in the course.

235. EDUCATIONAL MEDIA, TECHNOLOGY AND SYSTEMS  
The characteristic, capabilities, applications and implications of a variety of media to a variety of educational strategies.

236. AUDIOVISUAL INFORMATION TRANSMISSION  
Available knowledge and technology useful in the design of audiovisual materials. A search for principles useful in planning materials to aid in cognitive and effective experiences in educational contexts.

237. MEDIA PRODUCTION SURVEY  
Students prepare slides, graphics, recordings, and still and motion pictures for use in an educational program. Designed for teachers, trainees, and specialists.

238. PRE-PRODUCTION CREATIVITY OF VISUAL MEDIA  
How to visualize ideas, concepts and curricula, utilizing all video and cinemagraphic techniques of live action, animation, cuts, dissolves, freeze frames, slow motion, etc. to communicate them interestingly and effectively.

241. EDUCATIONAL FILM PRODUCTION  
Theoretical data and project applications: students produce educational messages in a motion picture film format through the use of portable video tape. 2 2-hour lectures.

309. PRINCIPLES AND METHODS IN TEACHING SECONDARY ENGLISH  
Purposes, problems, issues, methods, and materials in the teaching of English at the secondary level. Discussion, lectures, case studies, projects. Does not satisfy core requirements. Prerequisite for student teaching in English. Credit, 4.

311. PRINCIPLES AND METHODS IN TEACHING SECONDARY MATHEMATICS  
The nature and content of mathematics, learning strategies, and values of self and society; to help pre-service mathematics teachers formulate their own philosophy and rationale for education in mathematics.

357. TEACHING THE HANDICAPPED THROUGH MEDIA  
Professional preparation in educational media and technology. Partially fulfills requirements for the educational media and technology program.

360. EDUCATIONAL BROADCASTING  
A history of educational broadcasting. The current status, development, and availability of radio and television programming for educational purposes. Evaluation of radio and television in accordance with instructional objectives.

362. EDUCATIONAL TV WORKSHOP  
For teachers and teacher interns. The hardware of television; experimental use of television in solving educational problems.

367. PREPARATION AND USE OF AUDIO-VISUAL MATERIALS  
Machines, materials, and techniques for teaching groups of students.

Human Development

Head of Department: Professor Ellis G. Olim.  
Associate Professor Collard; Assistant Professors Craig, Forman, Karlson, Turner; Instructor Dumas.

Additional Staff: Lecturers Russell, Navon, Melrose, Batchelder, Alschuler, Blain; Day Care Center Staff Kaimin, Fletcher, Lamb, Martin.

The Department of Human Development is provisionally affiliated with the School of Education, while details of formal affiliation are being negotiated. For further information, contact the Academic Affairs Office at the School of Education.

MAJOR IN HUMAN DEVELOPMENT

|                                                                         | Credits |
|-------------------------------------------------------------------------|---------|
| General Education                                                       | 30      |
| Pre-Professional                                                        | 12      |
| Human Development Core Courses                                          | 9       |
| Additional Requirements for Major                                       | 18      |
| Additional courses required for graduation (Professional and Electives) | 51      |
| Total Credits                                                           | 120     |
| I. General Education                                                    | Credits |
| Rhetoric                                                                | 6       |
| HIST 100 or 101                                                         | 3       |

|                                                  |   |
|--------------------------------------------------|---|
| Three Humanities (C) courses                     | 9 |
| ZOOL 101, Introductory (E)                       | 3 |
| Three Natural Science or Mathematics (E) courses | 9 |
| PSYCH 101, Elementary (D)                        | 3 |
| ANTH 104, Intro. to Cultural Anthropology (D)    | 3 |

|                                          |   |
|------------------------------------------|---|
| II. Pre-Professional                     |   |
| PSYCH 270, Personality (D) OR HUMDEV 360 | 3 |
| PSYCH 325, Abnormal (D)                  | 3 |
| Two Sociology courses                    | 6 |

|                                                                |   |
|----------------------------------------------------------------|---|
| III. Human Development Core Courses                            |   |
| HUMDEV 152, Basic Concepts of Human Development                | 3 |
| HUMDEV 270, Child Development                                  | 3 |
| HUMDEV 370, Human Development in Adolescence & Young Adulthood | 3 |

IV. Major Requirements  
Human Development majors are required to take a minimum of 27-semester hours of credit. Core courses (see III above) are counted toward the 27-hour requirement. Also, Human Development courses listed in V below may be counted toward the 27-hour requirement as well as any other courses described below in the description of courses.

|                                                                  |     |
|------------------------------------------------------------------|-----|
| V. Teacher Certification Requirements                            |     |
| HUMDEV 272, Observational Child Study                            | 3   |
| HUMDEV 381, Laboratory School Management                         | 3   |
| HUMDEV 382, Philosophy and Theories of Early Childhood Education | 3   |
| HUMDEV 383, Student Teaching                                     | 3-6 |
| HUMDEV 384, Internship in a Child-Serving Profession             | 3   |
| ART 252, Art for the Young Child                                 | 3   |
| EDUC 251, Foundations of Education                               | 3   |

VI. Special Professional and Educational Programs  
Special programs may be arranged. Students may elect a semester or two of study at the Merrill-Palmer Institute of Human Development. Please consult the Department for information on other special programs.

VII. Electives  
Students shall elect an additional number of courses to bring the total credit hours to at least 120.



## 151. BASIC CONCEPTS OF HUMAN DEVELOPMENT I

Human development viewed from a number of perspectives: historical, philosophical, cross-cultural, biological, political, moral, and intellectual.

## 152. BASIC CONCEPTS OF HUMAN DEVELOPMENT II

The three major psychological theories that attempt to explain the psychological basis of human development; Behaviorism, Psychoanalysis, and Humanistic Psychology. Emphasis on the personal development of the students. Required of students majoring in Human Development.

## 270. CHILD DEVELOPMENT

The child from the development point of view. Interaction of heredity and environment on development. Prerequisites, SOCIOL 101, or PSYCH 101, or permission of instructor.

## 272. OBSERVATIONAL CHILD STUDY

Directed experience in observation techniques with laboratory school children. Prerequisite, HUMDEV 270 or equivalent.

## 300. HUMAN DEVELOPMENT IN INFANCY

Development of the infant from birth to age two. Prerequisite, HUMDEV 270, or permission of instructor.

## 310. LANGUAGE AND COGNITIVE DEVELOPMENT

Language and cognition from the developmental point of view. The relationship between language and thought and changes in the relationship in the course of cognitive growth. Prerequisite, HUMDEV 270 or equivalent.

## 315. CROSS-CULTURAL STUDY OF PERSONALITY DEVELOPMENT

Personality development viewed cross-culturally. Prerequisite, HUMDEV 270, or permission of instructor.

## 350. RESEARCH METHODS IN HUMAN DEVELOPMENT

Introduction to methods of studying human development. Prerequisite, HUMDEV 270 or equivalent; may be taken concurrently with HUMDEV 270.

## 360. THEORIES OF HUMAN DEVELOPMENT

Major theories devised to explain human development. Emphasis on psychological theories and concepts. The relevance and relationship of biological, social, and anthropological concepts. Prerequisite, HUMDEV 270 or equivalent.

## 370. HUMAN DEVELOPMENT IN ADOLESCENCE AND YOUNG ADULTHOOD

Human development during the second dec-

ade of life. Emphasis on biological, psychological, and sociological aspects. Theories of adolescent development. Prerequisite, HUMDEV 270 or equivalent, or permission of instructor. Open only to Human Development majors.

## 375. THE GHETTO FAMILY

Family relationships and styles of life of lower socio-economic status families. Emphasis is on social and psychological factors that influence interpersonal relationships and life strategies among the poor. Prerequisite, HUMDEV 270, or permission of instructor.

## 376. ALTERNATE FAMILY STYLES

Study and comparative evaluation of the traditional nuclear monogamous family and alternative family structures developed in this society.

## 380. HUMAN DEVELOPMENT IN ADULTHOOD

Human development from young adulthood through old age. A social, psychological perspective of change across the adult life span. Prerequisite, HUMDEV 270 or equivalent, or permission of instructor.

## 381. LABORATORY SCHOOL MANAGEMENT

Principles and methods of early childhood education. Teaching methods and curriculum planning for two- to five-year-old children. Prerequisite, HUMDEV 270 or equivalent.

## 382. PHILOSOPHY AND THEORIES OF EARLY CHILDHOOD EDUCATION

Philosophy, theories and history of early childhood education. Field trips. Prerequisite, HUMDEV 381 or permission of instructor.

## 383. STUDENT TEACHING

Students plan, direct, and teach curriculum in the laboratory school under staff supervision. Prerequisite, HUMDEV 270. Credit, 3-6.

## 384. INTERNSHIP IN A CHILD-SERVING PROFESSION

Teaching or working with normal or exceptional children. Head Start children, or the emotionally disturbed. Prerequisite, HUMDEV 270 or permission of instructor.

## 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

## 389. FIELD STUDY

Credit, 1-15.

## 391-397. SEMINAR IN HUMAN DEVELOPMENT

Reports and discussion of current research topics and studies in Human Development. 1-3 class hours. Credit, 1-3.

Kenneth C. Picha, Dean; Joseph S. Marcus, Associate Dean; Melton M. Miller, Jr., Associate Dean; Howard D. Segool, Director, COMTECH

The School of Engineering has the following recommended program of common courses for the freshman year.

|                                                 | Credits  |
|-------------------------------------------------|----------|
| 1st Semester                                    |          |
| RHET 100                                        | 3        |
| MATH 131                                        | 4        |
| CHEM 110A                                       | 4        |
| ENGIN 103 or 104                                | 2 or 3   |
| Social Science Elective                         | 3        |
|                                                 | 16 or 17 |
| 2nd Semester                                    |          |
| Rhetoric Electives                              | 3        |
| MATH 132                                        | 4        |
| Humanities/Soc. Science or Science <sup>1</sup> |          |
| Elective                                        | 3        |
| ENGIN 103 or 104                                | 2 or 3   |
| PHYSIC 161                                      | 4        |
| Physical Education                              | 1        |
|                                                 | 16 or 17 |

<sup>1</sup>The Science Elective requires adviser's approval. Courses from the following departments: Biochemistry, Biology, Chemistry, Entomology, Geology, Microbiology, Physics, Astronomy or Zoology.

## School of Engineering Core Requirements

### Communication Skills

RHET 100  
Rhetoric Elective  
Humanities

3 Elective courses in the University catalog with a "C" designation

### Social Sciences

3 Elective courses in the University catalog with a "D" designation

Mathematics (NOTE: Minimum of 5 courses beyond trigonometry and analytical geometry)

MATH 131  
MATH 132  
MATH 165

Natural Science (NOTE: Minimum of 16 credits)

CHEM 110A  
PHYSIC 161  
PHYSIC 162  
2 Science Electives

### Engineering

ENGIN 103  
ENGIN 104

## ENGINEERING

### 100. INTRODUCTION TO ENGINEERING AND TECHNOLOGY (E)

Engineering and technology as the management and processing of energy, material, and information. Major engineering concepts such



is the system, feedback and optimization. The methods of engineering including analysis, design synthesis, and decision making. Case studies and student projects. Not open to engineering majors.

03. INTRODUCTION TO ENGINEERING A  
A series of one-credit modules to introduce the various fields of engineering. Each module self-contained. Not recommended for transfer students. Credit, 1-4.

04. INTRODUCTION TO ENGINEERING B  
A two-module course in FORTRAN IV programming and numerical methods designed to give a working knowledge of computer programming. Additional modules as described in ENGIN 103 may be elected. Credit, 1-4.

251. NUMERICAL METHODS IN ENGINEERING  
A computer-oriented course introducing application and theory of numerical interpolation, solutions of transcendental equations, quadrature, solution of simultaneous linear equations, solutions of ordinary differential equations, and solving some simple boundary value problems. Prerequisites, MATH 165 or equivalent and an elementary FORTRAN or APL course.

385, 386. SPECIAL PROBLEMS  
Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

### Chemical Engineering

Head of Department: Professor John W. Eldridge. Professors Cashin, Douglas, Laurence, Lenz, Lindsey, Middleman, Roblee, Short, Vanpee; Associate Professor Kirk, Kittrell, McAvoy; Assistant Professor Novak; Adjunct Associate Professor Chapplelear.

| SOPHOMORE YEAR                                 |         |
|------------------------------------------------|---------|
| 1st Semester                                   | Credits |
| CH E 125, Fundamentals                         | 3       |
| CHEM 160, Organic                              | 3       |
| CHEM 162, Organic Chemistry Lab.               | 1       |
| PHYSIC 162, General Physics II                 | 4       |
| MATH 165, Multivariable Calculus               | 3       |
| CH E 101, Chemical Engineering Practice I      | 1       |
|                                                | 15      |
| 2nd Semester                                   |         |
| CH E 126, Chemical Engineering Thermodynamics  | 3       |
| CH E 258, Organic Chemical Technology          | 3       |
| MATH 231, Differential Equations for Engineers | 3       |
| Electives                                      | 6       |

|                                            |    |
|--------------------------------------------|----|
| CH E 102, Chemical Engineering Practice II | 1  |
|                                            | 16 |

### JUNIOR YEAR

|                                                    |         |
|----------------------------------------------------|---------|
| 1st Semester                                       | Credits |
| CH E 255, Chemical Engineering Fluid Mechanics     | 3       |
| CH E 250, Applied Physical and Chemical Equilibria | 3       |
| CHEM 285, Physical Chemistry                       | 3       |
| ECE 190, Fundamentals of Electrical Engineering    | 3       |
| Elective                                           | 3       |
| CH E 201, Chemical Engineering Practice III        | 1       |
|                                                    | 16      |
| 2nd Semester                                       |         |
| CH E 256, Chemical Engineering Heat Transfer       | 3       |
| CH E 257, Mass. Transfer                           | 3       |
| CHEM 286, Physical Chemistry                       | 3       |
| CHEM 288, Physical Chemistry Laboratory            | 2       |
| ENGL 331, Technical Writing                        | 2       |
| Elective                                           | 3       |
| CH E 202, Chemical Engineering Practice IV         | 1       |
|                                                    | 17      |

### SENIOR YEAR

|                                               |         |
|-----------------------------------------------|---------|
| 1st Semester                                  | Credits |
| CH E 358, Staged Operations                   | 3       |
| CH E 380, Kinetics and Reactor Design         | 3       |
| CH E 383, Process Evaluation                  | 3       |
| Electives                                     | 6       |
| CH E 301, Chemical Engineering Practice V     | 1       |
|                                               | 16      |
| 2nd Semester                                  |         |
| CH E 376, Process Control and Dynamics        | 3       |
| CH E 384, Process and Plant Design            | 3       |
| CH E 392, Seminar                             | 2       |
| CH E 361 Ch.E. Analysis I (or Math. Elective) | 3       |
| Electives                                     | 3       |
| CH E 302, Chemical Engineering Practice VI    | 1       |
|                                               | 15      |

Note: The electives must include one 3-credit mathematics course to satisfy University core requirements, at least three 3-credit humanities courses plus at least three 3-credit courses in the social sciences. Note that any ROTC study must be in addition to the normal load.

### OPTIONS

In addition to the standard curriculum listed above, the Chemical Engineering

Department offers five optional curricula, each of which provides an emphasis in one of the following fields:

Biochemical Engineering  
Business Administration  
Environmental Engineering  
Food Science  
Pre-Medicine  
Each option satisfies the requirements for the Bachelor's Degree in Chemical Engineering, as well as providing a coherent core of courses in the specialty.

101, 102, 201, 202, 301, 302. CHEMICAL ENGINEERING PRACTICE I-VI  
By means of laboratory investigations, classroom demonstrations, films, plant trips and invited speakers, theoretical lecture material is related to industrial practice. Each practice course is closely coordinated with concurrent lecture material and emphasizes application of basic concepts in the solution of industrial problems. Corequisite, the concurrent Ch.E. courses for that semester of the curriculum, or permission of instructor. 3-hour laboratory period or 1-hour demonstration or lecture.  
Credit, 1 each semester of the sophomore, junior and senior years.

125 (I). FUNDAMENTALS  
Nature and scope of chemical engineering through study of selected chemical processes and of material and energy balances. Prerequisite, CHEM 112 or 114.

126 (II). CHEMICAL ENGINEERING THERMODYNAMICS  
The fundamental principles of thermodynamics. An in-depth discussion of the First and Second laws; properties of single-component systems, thermodynamic cycles, phase and chemical equilibria. Solution methods for complex energy and material balance problems are introduced. Prerequisite, CHEM 160, MATH 165, CH E 125.

250. APPLIED PHYSICAL AND CHEMICAL EQUILIBRIA  
The fundamentals of the thermodynamics of phase equilibrium and chemical reaction equilibrium, and applications of these principles to industrial problems. Prerequisites CH E 126.

255 (I). CHEMICAL ENGINEERING FLUID MECHANICS  
An introduction to momentum transport in fluids including the development of the Navier-Stokes equations and boundary layer analysis. Emphasis on the application of the theory to laminar and turbulent flow in chemical process equipment such as: flow meters, pipes, pumps, packed beds, filtration equipment, sedimentation, and classification units, etc. Prerequisites, CH E 126, MATH 231.

## 256 (II). CHEMICAL ENGINEERING HEAT TRANSFER

Theory of heat transfer by conduction, convection, and radiation with applications to the Unit Operations of Chemical Engineering. Prerequisite, CH E 255.

## 257 (II). MASS TRANSFER

Theory and application of diffusional phenomena. Microscopic and macroscopic problems of mass transfer, diffusion in a boundary layer, diffusion and chemical reaction, inter-phase transfer. The continuous contactor provides the framework in which are analyzed absorption, extraction, chromatographic separators and simultaneous heat and mass transfer. Prerequisite, CH E 255.

## 258 (II). ORGANIC CHEMICAL TECHNOLOGY

Applications of the principles of structure and reaction mechanisms of organic chemistry in the preparation and use of industrially-important organic chemicals and polymers. Prerequisite, CHEM 160 or permission of instructor.

## 358 (I). STAGED OPERATIONS

An introduction to the design of equilibrium stage processes. Topics include the thermodynamics of phase equilibria, binary and multicomponent distillation, absorption, extraction, leaching and azeotropic phenomena. Prerequisites, CH E 126, CH E 257.

## 360. AIR POLLUTION CONTROL PROCESSES

An introduction to the techniques of air pollution control particulate removal, wet and dry scrubbing processes, removal of selected species from gases (e.g., sulfur dioxide). Prerequisites, freshman chemistry, permission of instructor.

## 361 (I). CHEMICAL ENGINEERING ANALYSIS I

Mathematical techniques applied to chemical engineering problems. Emphasis on ordinary differential equations corresponding to specific problems and on their solution. Prerequisites, CH E 256 and 257.

## 362 (II). CHEMICAL ENGINEERING ANALYSIS II

Mathematical analysis of chemical engineering problems continued. Topics include: matrix methods, vector analysis, calculus of finite differences, numerical solution of ordinary and partial differential equations, complex variables and Laplace transformations. Emphasis on applying these techniques to real chemical engineering processes and on the physical and mathematical interpretation of results. Prerequisite, CH E 361.

## 363 (I). SURVEY OF NUCLEAR ENGINEERING I

Principles of reactor physics and problems involved in design and operation of nuclear

reactors; heat transfer, shielding, instrumentation and waste disposal. Prerequisites, CHEM 112 or 114; PHYSIC 142 or 162; MATH 165, or equivalent, and permission of instructor. 2 class hours, 1 3-hour laboratory period.

## 364 (II). SURVEY OF NUCLEAR ENGINEERING II

Continuation of 363; emphasis on reactor physics. Prerequisite, CH E 363. 2 class hours, 1 3-hour laboratory period.

## 370. APPLIED POLYMER SCIENCE

A survey of the methods of preparing important synthetic polymers, and their properties and applications. Prerequisites undergraduate organic and physical chemistry.

## 374 (I). SIMULATION

Simulation of physical processes using both analog and digital techniques. Topics include: programming of analog computers (linear and non-linear components, scaling, iterative operation), solutions of linear and non-linear differential equations, simulation language, useful numerical techniques (Runge-Kutta, relaxation). Prerequisite, MATH 231. 2 class hours, 1 3-hour laboratory period.

## 376 (II). PROCESS CONTROL AND DYNAMICS

Theoretical and practical factors governing automatic control of industrial processes; control systems, review of measurement devices, control modes, mathematical relationships and analysis of control systems. Prerequisites, MATH 231.

## 380 (I). KINETICS AND REACTOR DESIGN

Principles underlying rates of transformations of matter and energy. Review of pertinent differential equations; effect of temperature and catalysis on chemical reaction rates; application to design of chemical reactors. Prerequisites, CH E 126, 250; CHEM 286. 3 class hours.

## 383 (I). PROCESS EVALUATION

Solution of problems which require the use and integration of principles studied in previous courses. Final results will be determined by application of economic considerations. Prerequisites, CH E 256, 257; CHEM 286.

## 384 (II). PROCESS AND PLANT DESIGN

Optimum design of selected chemical plants; production rates, site location, process flow diagrams, equipment design and sizing, total costs, etc. Prerequisite, CH E 383. 2 3-hour computation periods.

## 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

## 388 (I). OPTIMIZATION

Fundamental ideas and application of optimi-

zation techniques in operation and design. Topics include: extrema of functions, effect of constraints. LaGrange multipliers, introduction to linear programming, geometric programming and dynamic programming. Prerequisite, MATH 187.

## 389 (II). OPTIMIZATION USING VARIATIONAL TECHNIQUES

The application of the calculus of variations Pontryogine maximum principle, and dynamic programming to the design and control of chemical process equipment. Systems described by both ordinary and partial differential equations. Topics include: optimal reactor design, the synthesis of optimal control systems and optimal periodic operation of processing units. Prerequisite, MATH 231.

## 392 (II). SEMINAR

Preparation and discussion of professional topics. Prerequisite, CH E 256, 257. 2 class hours. Credit, 2

## 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4

## 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5

## Civil Engineering

Head of Department: Professor Merit P. White. Professors Adrian, Archer, Berger, Boyer, Carver, Colonell, Feng, Hendrickson, Heronemus, Higgins, Marcus, Nash, Shuldiner; Associate Professors Bemben, Chajes, DiGiano, Dzialo, Farris, Grow, Kuzminski, Miller, Stockton, Ward; Assistant Professors Harris, Mangarella.

## SOPHOMORE YEAR

| 1st Semester                     | Credits |
|----------------------------------|---------|
| Rhetoric Elective                |         |
| MATH 165, Multivariable Calculus |         |
| PHYSIC 162, General Physics II   |         |
| CE 101, Surveying                |         |
| CE 140, Statics                  |         |

## 2nd Semester

|                                 |  |
|---------------------------------|--|
| CE 102, Transportation Location |  |
| Mathematics Elective            |  |
| M&AE 163, Thermodynamics        |  |
| CE 141, Strength of Materials I |  |
| CE 142, Dynamics                |  |
| CE 286, Graphics <sup>2</sup>   |  |

## JUNIOR YEAR

| 1st Semester                         | Credits |
|--------------------------------------|---------|
| CE 210, Transportation Systems       |         |
| ECE 190, Elect. Engr. for Non-Majors |         |
| CE 220, Soil Mechanics               |         |



|                                    |    |
|------------------------------------|----|
| CE 230, Theory of Structures I     | 3  |
| CE 257, Elementary Fluid Mechanics | 3  |
|                                    | 15 |

## 2nd Semester

|                                         |    |
|-----------------------------------------|----|
| Mathematics Elective <sup>1</sup>       | 3  |
| Social Science Elective                 | 3  |
| CE 258, Fluid Mechanics Laboratory      | 1  |
| CE 260, Engineering Hydraulics          | 3  |
| CE 270, Basic Environmental Engineering | 4  |
| CE 331, Design of Metal Structures      | 3  |
|                                         | 17 |

## SENIOR YEAR

|                                        |         |
|----------------------------------------|---------|
| 1st Semester                           | Credits |
| CE 280, Engineering Materials          | 3       |
| CE 333, Reinforced Concrete Structures | 3       |
| Humanities Elective                    | 3       |
| Social Science Elective                | 3       |
| Electives <sup>1</sup>                 | 6       |
|                                        | 18      |

## 2nd Semester

|                               |    |
|-------------------------------|----|
| CE 396, Professional Problem  | 3  |
| Humanities Elective           | 3  |
| ENGL 331, Technical Writing   | 2  |
| Science Elective <sup>1</sup> | 3  |
| Electives <sup>1</sup>        | 6  |
|                               | 17 |

<sup>1</sup>Differential Equations, Statistics, ENGIN 251, Partial Differential Equations, Linear Algebra, or other mathematics courses approved by advisor.

<sup>2</sup>Students passing proficiency exam or otherwise showing competence may have requirement waived.

<sup>3</sup>Two courses must be Civil Engineering Department electives. Advanced ROTC may be used for a maximum of two courses or 6 credits. All electives must be approved by advisor.

<sup>4</sup>Must be from department of Geology, Zoology, Biology, Microbiology, or Marine Science 225.

## 100 (II). PLANE SURVEYING

Taping, transit, level, stadia, topographic surveying and mapping, care and adjustment of instruments. (Not accepted for credit for Civil Engineering majors.) Prerequisite, trigonometry. 2 class hours, 1 3-hour laboratory period.

## 101 (I), (II). SURVEYING

Theory of surveying. Use, care and maintenance of tape, transit, and level; traverse computation; topographic surveying and mapping; property surveying. Prerequisite, trigonometry. 2 class hours, 1 3-hour laboratory period.

## 102 (I), (II). TRANSPORTATION LOCATION

Route location; horizontal and vertical alignment; construction computations. Prerequisite, CE 101. 2 class hours, 1 3-hour laboratory period.

## 140 (I), (II). STATICS

Force systems, friction, first and second moments. Corequisite, integral calculus concurrently.

## 141 (I), (II). STRENGTH OF MATERIALS I

Simple and combined stresses and strains in tension, compression, and shear; torsion; stresses and deflections in beams. Prerequisite, statics.

## 142 (I), (II). DYNAMICS

Motions of particles and rigid bodies and the force systems associated with these motions. Prerequisite, statics.

## 210 (I), (II). TRANSPORTATION SYSTEMS

Planning, design and operation of highway and railroad systems. Computer methods used in conjunction with laboratory design and planning problems. Prerequisite, CE 102. 2 class hours, 1 3-hour laboratory period.

## 220 (I), (II). SOIL MECHANICS

Engineering uses and mechanical properties of soils. 2 class hours, 1 3-hour laboratory period.

## 222 (I). SOIL TESTING

Sampling and testing of soils for engineering purposes. Prerequisite, CE 220. 1 class hour, 2 3-hour laboratory periods.

## 230 (I), (II). THEORY OF STRUCTURES I

Analysis of statically indeterminate structures. Prerequisite, CE 141.

## 232 (I). THEORY OF STRUCTURES II

Analysis of statically indeterminate structures. Prerequisite, CE 230.

## 234 (II). THEORY OF STRUCTURES III

Analysis of complex or special structures. Prerequisites, CE 232, 331, 333 concurrently.

## 235 (II). MATRIX ANALYSIS OF STRUCTURES

Development and use of the flexibility and stiffness methods of matrix analysis for determinate and indeterminate structures. Prerequisite, CE 232.

## 240 (I). STRENGTH OF MATERIALS II

Calculation of stresses and strains in components of machines and structures. Prerequisite, CE 141.

## 256 (I). INTRODUCTION TO HYDRODYNAMICS

Mathematical treatment of basic theorems of classical hydrodynamics including potential flow, conformal mapping, and wave and vortex motions. Prerequisite, MATH 186.

## 257 (I), (II). ELEMENTARY FLUID MECHANICS

Fundamentals of fluid mechanics including

fluid properties, fluid behavior under static and dynamic conditions, and development of basic fluid flow equations. Prerequisite, statics.

## 258 (I), (II). FLUID MECHANICS LABORATORY

Laboratory investigations of fluid mechanics principles, pipe and open channel flow, hydraulic machinery, and fluid measurements. Prerequisite, CE 257. Corequisite, CE 260. 1 2-hour laboratory. Credit, 1.

## 259 (II). ENGINEERING OCEANOGRAPHY

Fluid mechanics problems of ocean and coastal engineering including currents, tides, surface waves, tsunami and seiche phenomena, and ocean circulation. Prerequisite, CE 257.

## 260 (I), (II). ENGINEERING HYDRAULICS

Civil Engineering applications of fluid mechanics including analysis of water distribution and drainage systems, basic hydrology, fluid drag on structures, and hydraulic machinery. Prerequisite, CE 257.

## 261 (I). OPEN CHANNEL FLOW

Steady flow in open channels including channel transitions and controls, sediment transport, and elementary design of related hydraulic structures. Prerequisite CE 257.

## 270 (I), (II). BASIC ENVIRONMENTAL ENGINEERING

Quantity, quality and treatment of water and wastewater. Air pollution and solid waste problems. Prerequisites, CHEM 112; CE 257 concurrently. 3 class hours, 1 3-hour laboratory period. Credit, 4

## 271 (I). INTRODUCTION TO ENVIRONMENTAL POLLUTION CONTROL

Basic engineering aspects of environmental pollution control. (For students not majoring in Civil Engineering.)

## 275. ATMOSPHERIC DISPERSION OF POLLUTANTS

Physical and dynamical properties of the atmosphere and their effect on dispersion of airborne material. Methods of calculation of concentration fields in simple and complex flowfields. Practical approaches to the analysis of diffusion from point, jet and urban area sources. Review of research techniques for measuring diffusion parameters. Prerequisite, integral calculus. Credit, 2-3.

## 280 (I), (II). ENGINEERING MATERIALS

Emphasis on physical behavior and the correlation between experiment and theory. Prerequisite, CE 141, 2 class hours, 1 3-hour laboratory period.



**281. MATERIALS IN THE OCEAN ENVIRONMENT**

Treatment of the response of structural materials to the ocean environment; theory of corrosion, abrasion, erosion, and biological attack. Prerequisite, permission of instructor.

**285 (II). CONSTRUCTION PROBLEMS**

Legal aspects of construction contracts; estimating and bidding; critical path scheduling.

**286 (II). ENGINEERING GRAPHICS**

Theory and practice of engineering graphics. 1 class hour, 1 3-hour laboratory period.

Credit, 2.

**290. OCEAN ENGINEERING PAYLOAD DEVICES**

Techniques for augmentation of man's abilities in the sea. Underwater illumination, photography, manipulative and prosthetic devices, tools and instruments for underwater work. Prerequisite, permission of instructor.

**291. OCEAN SYSTEMS ENGINEERING AND DESIGN**

Systems engineering applied to synthesis of systems capable of doing useful work in the deep oceans. Emphasis on design of submergence vessels. Prerequisite, permission of instructor. 3 class hours, 1 3-hour laboratory period.

Credit, 4.

**305 (I). ADVANCED SURVEYING**

Elements of astronomical, geodetic and photogrammetric surveying; coordinate systems and map projections. Prerequisite, CE 101. 2 class hours, 1 3-hour laboratory period.

**311 (II). TRAFFIC ENGINEERING**

Engineering solutions to planning, design, and operations problems of urban and rural street and highway networks. Prerequisite, CE 210. 2 class hours, 1 3-hour laboratory period.

**321 (I). FOUNDATION ENGINEERING**

Foundations and earth structures; interpretation of borings; analysis and design of piles, footings, piers, abutments and retaining walls. Prerequisite, CE 220.

**323 (II). SOIL MECHANICS FOR TRANSPORTATION ENGINEERING**

Application of the principles of soil mechanics to the field of Transportation Engineering. Topics include the evaluation of the stability of soils as subgrade and embankment materials; the role of the subgrade properties of soils. Prerequisite, CE 220.

**331 (I), (II). DESIGN OF METAL STRUCTURES**

Selecting and proportioning elements and connections of structural frames of buildings and bridges. Prerequisite, CE 230. 2 class hours, 1 3-hour laboratory period.

**333 (I), (II). REINFORCED CONCRETE STRUCTURES**

Analysis and design of reinforced concrete structures. Prerequisite, CE 230.

**334 (II). ADVANCED TOPICS IN CONCRETE**

Design of various types of reinforced concrete building frames; elastic theory and ultimate strength procedures. Prerequisites, CE 232 and 333.

**357 (I). THEORY OF HYDRAULIC SIMILITUDE**

Hydraulic similitude, dimensional analysis, methods of obtaining dynamic similarity in hydraulic models in actual practice, analysis of typical hydraulic models. Prerequisite, CE 257.

**360 (I). HYDROLOGY**

The hydrologic cycle including precipitation, runoff, groundwater, flood routing, reservoir sedimentation, water law, and applications of hydrologic techniques to water resources engineering. Prerequisite, CE 257 or permission of instructor.

**362 (II). WATER RESOURCES ENGINEERING**

Planning and design of dams, reservoirs, and other related hydraulic structures, including analysis of existing and proposed water resources projects. Prerequisite, CE 257 or permission of instructor.

**365. ENVIRONMENTAL INSTITUTIONS AND POLICIES**

Public policies and laws relating to the use and conservation of water resources. Analysis of water-related governmental organization and programs at the Federal, state and local levels. Prerequisite, permission of instructor.

**369. ENVIRONMENTAL ENGINEERING TECHNOLOGY**

The technology available to provide clean air, clean water, and to dispose of solid waste. Some field trips to see environmental effects, treatment plants, and quality monitoring stations. 1 4-hour laboratory (or field trip) period, and 1 1-hour lecture. Prerequisite, permission of instructor.

Credit, 2.

**370. ADVANCED ENVIRONMENTAL ENGINEERING PRINCIPLES**

The underlying physical, chemical and biological principles involved in engineering studies of air, water and solid waste pollution problems. Basin concepts combined with model pollution control systems and responses of the atmospheric, aquatic and terrestrial environments. Prerequisite, permission of instructor.

**371 (II). INDUSTRIAL WASTE TREATMENT AND CONTROL**

Composition of industrial effluents; pollution

criteria and effects of industrial wastes on receiving waters; physical, chemical and biological methods and applications in treatment. Prerequisite, permission of instructor. 2 class hours, 1 3-hour laboratory period.

**372 (I). ENVIRONMENTAL ENGINEERING ANALYSIS I**

Application of chemical principles to environmental engineering analysis with specific reference to pollution indices. Prerequisite, CHEM 112. 2 class hours, 1 3-hour laboratory period.

**373 (II). ENVIRONMENTAL ENGINEERING ANALYSIS II**

The fundamental microbiological and biochemical properties of the microorganisms important in environmental engineering practice. Prerequisite, CE 372 or permission of instructor. 2 class hours, 1 3-hour laboratory period.

**374. RADIOLOGICAL HEALTH ENGINEERING**

Basic principles and procedures pertaining to safe control of all common sources of ionizing radiation. Prerequisite, permission of instructor.

**375 (II). SURFACE WATER QUALITY CONTROL**

Evaluation and control of water quality in streams, lakes and reservoirs. Mathematical analysis of patterns of water movement and their relation to water quality.

**376 (I). SOLID WASTES**

The production, collection, transportation, treatment, and disposal of solid waste products (including municipal, industrial, and agricultural wastes). 2 class hours, 1 3-hour laboratory period.

**385, 386. SPECIAL PROBLEMS**

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

**396 (II). PROFESSIONAL PROBLEM**

A problem relating to the student's area of interest in Civil Engineering studied under the direction of a member of the faculty. May be a joint project with students from Civil Engineering or other departments. Oral and written reports required. Prerequisite, senior standing.

**398. SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

**399. SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Electrical and Computer Engineering

Chairman of Department: Professor Jack K. Wolf. Professors Franks, Hutchinson, McIntosh, Monopoli, Navon, Sheckels, Tang, Thomas, Stone; Associate Professors Bobrow, Edwards, Ehrich, Fitzgerald, Glorioso, Hill, Laestadius, Mohn, Scott, Yngvesson; Assistant Professors Herchenreder, Kohler.

### ELECTRICAL ENGINEERING OPTION FRESHMAN YEAR

|                              | Credits |
|------------------------------|---------|
| Rhet 100, Lang. and Writing  | 3       |
| MATH 131, Calculus I         | 4       |
| CHEM 111, General Chemistry  | 3       |
| ENGIN 103, Intro. to Engg. A | 3       |
| Soc. Sc. Elective (D)        | 3       |
|                              | 16      |

|                              | Credits |
|------------------------------|---------|
| MATH 132, Calculus II        | 4       |
| ENGIN 104, Intro. to Engg. B | 2       |
| PHYSIC 161, General Physics  | 4       |
| Humanity Elective (C)        | 3       |
| Science Elective (E)         | 3       |
|                              | 16      |

### SOPHOMORE YEAR

|                                  | Credits |
|----------------------------------|---------|
| ECE 141, Systems Analysis        | 4       |
| MATH 165, Multivariable Calculus | 3       |
| PHYSIC 162, General Physics      | 4       |
| Rhetoric Elective                | 3       |
| Humanity Elective (C)            | 3       |
|                                  | 17      |

|                                 | Credits |
|---------------------------------|---------|
| ECE 142, Systems Analysis       | 4       |
| MATH 167, intro. to Linear Alg. | 3       |
| PHYSIC 163, General Physics     | 4       |
| M&AE 135, Materials             | 3       |
| Humanity Elective (C)           | 3       |
|                                 | 17      |

### JUNIOR YEAR

|                              | Credits |
|------------------------------|---------|
| ECE 201, Electr. Mat. & Dev. | 3       |
| ECE 204, Circuit Theory      | 4       |
| ECE 257, Field Analysis I    | 3       |
| ENGL 331, Technical Writing  | 2       |
| *Math Elective               | 3       |
|                              | 15      |

|                                 | Credits |
|---------------------------------|---------|
| ECE 202, Active Networks I      | 3       |
| ECE 258, Field Analysis II      | 3       |
| ECE 265, Random Signal Theory   | 3       |
| ECE 205, Intermediate Lab.      | 2       |
| ECE 210, Digital Circuit Theory | 3       |
| ECE 394, Professional Seminar   | 1       |
|                                 | 15      |

### SENIOR YEAR

|                             | Credits |
|-----------------------------|---------|
| ECE 274, Advanced Lab Ia    | 1       |
| ECE 275, Advanced Lab Ib    | 1       |
| ECE 203, Active Networks II | 3       |
| Technical Elective          | 3       |
| Technical Elective          | 3       |
| Soc. Sc. Elective (D)       | 3       |
|                             | 14      |

|                              | Credits |
|------------------------------|---------|
| ECE 276, Advanced Laboratory | 3       |
| Technical Elective           | 3       |
| Technical Elective           | 3       |
| Soc. Sc. Elective            | 3       |
| Free Elective                | 3       |
|                              | 15      |

\*MATH 211, 331, 241 or other math course with consent of advisor.

### COMPUTER SYSTEMS ENGINEERING OPTION

#### FRESHMAN YEAR

|                              | Credits |
|------------------------------|---------|
| RHET 100, Lang. and Writing  | 3       |
| MATH 131, Calculus I         | 4       |
| CHEM 111, General Chemistry  | 3       |
| ENGIN 103, Intro. to Engg. A | 3       |
| Soc. Sc. Elective (D)        | 3       |
|                              | 16      |

|                              | Credits |
|------------------------------|---------|
| MATH 132, Calculus II        | 4       |
| ENGIN 104, Intro. to Engg. B | 2       |
| PHYSIC 161, General Physics  | 4       |
| Rhetoric Elective            | 3       |
| Science Elective (E)         | 3       |
|                              | 16      |

#### SOPHOMORE YEAR

|                                  | Credits |
|----------------------------------|---------|
| ECE 141, Systems Analysis        | 4       |
| MATH 165, Multivariable Calculus | 3       |
| PHYSIC 162, General Physics      | 4       |
| Humanity Elective (C)            | 3       |
| Rhetoric Elective                | 3       |
|                                  | 17      |

|                                 | Credits |
|---------------------------------|---------|
| ECE 142, Systems Analysis       | 4       |
| MATH 167, Intro. to Linear Alg. | 3       |
| PHYSIC 163, General Physics     | 4       |
| ENGL 331, Technical Writing     | 2       |
| Humanity Elective (C)           | 3       |
|                                 | 16      |

#### JUNIOR YEAR

|                                  | Credits |
|----------------------------------|---------|
| ECE 202, Active Networks I       | 3       |
| ECE 210, Digital Circuit Theory  | 3       |
| COINS 201, Mach. & Assemb. Lang. | 3       |
| Soc. Sc. Elective (D)            | 3       |
| *Math Elective                   | 3       |
|                                  | 15      |

|                                                                      | Credits |
|----------------------------------------------------------------------|---------|
| **ECE 265, Random Signal Theory                                      | 3       |
| ECE 342, Data Structures                                             | 3       |
| ECE 346, Comp. Syst. Lab. I                                          | 1       |
| ECE 394, Professional Seminar                                        | 1       |
| COINS 335, Computer Architecture<br>or ECE 278 Digital System Design | 3       |
| Technical Elective                                                   | 3       |
| Soc. Science Elec. (D)                                               | 3       |
|                                                                      | 17      |

### SENIOR YEAR

|                                 | Credits |
|---------------------------------|---------|
| ECE 350, Comp. Syst. Lab. II    | 3       |
| ECE 344, Programming Structures | 3       |
| Technical Elective              | 3       |
| Non-Technical Elective          | 3       |
| Free Elective                   | 3       |
|                                 | 15      |

|                               | Credits |
|-------------------------------|---------|
| ECE 354, Comp. Syst. Lab. III | 3       |
| COINS 377, Operating Syst.    | 3       |
| Technical Elective            | 3       |
| Non-Technical Elective        | 3       |
| Free Elective                 | 3       |
|                               | 15      |

\*MATH 211, 331, 241 or other with consent of advisor.

\*\*MATH 233, Probability may be submitted for ECE 265. Three Social Science (D) electives and three Humanity (C) electives are required. All elective courses must be satisfied and be approved by advisor.

#### 141 (I). SYSTEMS ANALYSIS I

Physical characteristics and mathematical models of system elements; techniques for writing and solving system dynamic equations. Prerequisite, ENGIN 104 and MATH 132 or 136. 3 class hours, 1 3-hour problem/lab period. Credit, 4.

#### 142 (II). SYSTEMS ANALYSIS II

Concepts relating to transfer functions; digital and analog solutions of system equations, time and frequency domain analysis techniques and stability. Prerequisite, ECE 141. 3 class hours, 1 3-hour problem/lab period. Credit, 4.

#### 143 (II). INTRODUCTORY LABORATORY

Laboratory techniques in circuits and systems appropriate to the level of sophomore engineers. Corequisite, ECE 142. 1 3-hour laboratory period. Credit, 1.

#### 201 (I). ELECTRONIC MATERIALS AND DEVICES

Introduction to quantum theory of solids and quantum statistics, conduction processes in semiconductors and metals, physics and theory of p-n junctions and bipolar transistors. Prerequisite, PHYSIC 162.

#### 202 (II). ACTIVE NETWORKS I

P-n junction diodes and applications, bipolar



transistors, linear equivalent circuits, field effect transistors (FET's), thyristors, small signal, power and tuned amplifiers. Prerequisite, ECE 142, 201.

#### 203 (I). ACTIVE NETWORKS II

Monolithic digital and linear integrated devices and circuits, feedback, op-amps, oscillators, and modulation. Prerequisite, ECE 202.

#### 204 (II). LINEAR SYSTEM THEORY

Concepts used in the analysis of physical systems; emphasis on electrical circuits and digital filters. Fourier and Laplace transforms, z-transforms, frequency domain analysis of systems, elementary synthesis. Prerequisite, ECE 142. 3 class hours, 1 3-hour problem/lab period. Credit, 4.

#### 205 (II). INTERMEDIATE LABORATORY

Laboratory techniques pertaining to electrical circuit theory, active network analysis and digital circuits appropriate to a junior year competence in electrical engineering. Prerequisite, junior standing. 2 3-hour laboratory periods. Credit, 2.

#### 210 (II). INTRODUCTION TO DIGITAL AND COMPUTER SYSTEMS

An introduction to the theory of digital circuits stressing general techniques for the analysis and synthesis of combinational and sequential logic systems. Prerequisite, junior standing.

#### 241 (I). ENERGY CONVERSION I

Electromechanical energy conversion. Dynamical systems analysis of incremental motion transducers and rotary energy converters. Prerequisites, ECE 142, 257.

#### 243 (II). ENERGY CONVERSION II

Direct energy conversion. Batteries, fuel cells, thermo-electric, photo-voltaic, thermionic and MHD generators. Prerequisite, ECE 201.

#### 257 (I). FIELD ANALYSIS I

Vector calculus. Conservative and non-conservative fields. Static and time-varying electromagnetic fields. Maxwell's equations, relations between field and circuit theory. Prerequisites, PHYSIC 162, MATH 165.

#### 258 (II). FIELD ANALYSIS II

Continuation of ECE 257 with emphasis on time-varying electromagnetic fields and wave phenomena. Prerequisite, ECE 257.

#### 265 (I). RANDOM SIGNAL THEORY

Introduction to probability and stochastic processes. Correlation theory and its application to electrical engineering problems in communication and control systems. Prerequisite, ECE 142.

#### 266 (I). SIGNAL PROCESSING AND COMMUNICATION SYSTEMS I

Principles of design of modern communication systems.

Mathematical description of digital and analog signals. Basic limitations of modulation techniques and information capacity of transmission systems. Prerequisite, ECE 142.

#### 267 (II). SIGNAL PROCESSING AND COMMUNICATION SYSTEMS II

Techniques for evaluating performance of modulation and information transmission systems. Extraction of signals from noise. Minimum error signals estimation and detection. Prerequisites, ECE 265, 266, or permission of instructor.

#### 270. SOLID-STATE POWER DEVICES

Power rectifiers and transistors, thyristors. Power circuits: regulators, inverters, converters, cycloconverters, phase-control and motor control circuits.

#### 271 (II). MICROELECTRONICS

Principles and applications of micro-electronics with particular emphasis on silicon monolithic integrated circuits. Fundamental limitations of micro-miniaturization, design constraints imposed by the monolithic technique, planar technology, digital and linear microcircuits. Prerequisite, ECE 201.

#### 274 (I). ADVANCED LABORATORY Ia

275 (I). ADVANCED LABORATORY Ib  
Projects designed to provide laboratory experience related to specific technical electives. Prerequisite senior standing. Credit, 1 each.

#### 276 (II). ADVANCED LABORATORY II

Laboratory techniques developed in ECE 275, used in a concentrated study in the student's area of interest. Prerequisite, ECE 275.

#### 278 (I). DIGITAL SYSTEMS DESIGN

The design of a digital system by the interface of subunits described in terms of register sets. The subunits are interfaced at the architectural level by a set of instructions and at the logic level by the Boolean equations derived from the corresponding register transfers. Prerequisite, ECE 210.

#### 286 (II). POWER SYSTEM ANALYSIS

Power transfer diagrams, voltage studies, system stability criteria, shortcircuit calculations, and protective methods. Prerequisite, ECE 241.

#### 287 (II). MARINE INSTRUMENTATION

A survey of the oceanographic parameters of interest to ocean engineers; the theory of measurement for those parameters. Typical examples of existing measuring equipment.

#### 288 (II). PULSE ELECTRONICS

Analysis and design of circuits for the generation, transmission and processing of information by means of pulses. Prerequisite, ECE 202.

#### 292 (I). FEEDBACK CONTROL SYSTEMS I

Time domain and frequency domain analysis and synthesis techniques for linear continuous control systems. The relationships between these techniques. Prerequisites, ECE 142 or permission of instructor.

#### 293 (II). FEEDBACK CONTROL SYSTEMS II

Analysis of nonlinear continuous control systems; introduction to digital control systems and optimization techniques. Prerequisite, ECE 292.

#### 294 (I). MICROWAVE ENGINEERING I

Electromagnetic theory applied to microwave propagation in waveguides and coaxial lines. Microwave circuit theory with applications to passive microwave networks. Prerequisite, ECE 258.

#### 295 (II). MICROWAVE ENGINEERING II

Active and nonlinear devices and phenomena in the amplification, detection, generation and propagation of microwaves. Typical devices include varactors, Impatt and Gunn Oscillators and Schottky diodes. Radiation and propagation of microwaves from a communication point of view. Prerequisites, ECE 201, 258.

#### 298 (I). BIOMEDICAL ENGINEERING I

Techniques and concepts from control and communication theory useful in biological, medical and psycho-physical research. Prerequisite, permission of instructor.

#### 299 (II). BIOMEDICAL ENGINEERING II

Engineering analysis of the visual, position-motion sensing, taste and smell biological communication channels; human tracking capabilities; analog and hybrid modeling. Prerequisite, ECE 298.

#### 306 (I). ACOUSTICS

The fundamentals of sound generation, propagation and detection. Applications of theory to underwater sound and human speech. Prerequisite, junior standing or permission of instructor.

#### 311 (II). APPLIED NONLINEAR ANALYSIS

The analysis of nonlinear mechanical and electrical systems. Numerical, graphical and analytical methods used to determine the behavior of modern nonlinear devices. Prerequisite, Math 167.

#### 342 (II). NON-NUMERICAL ALGORITHMS

Description and implementation of data structures such as lists, queues, trees, and graphs in PASCAL, and their application in the design of computer algorithms. Applications include searching and sorting. Prerequisites, assembly language programming and knowledge of some higher level language.



**344 (I). CONCEPTS OF PROGRAMMING LANGUAGES**  
Basic concepts underlying modern programming languages and their implementation. Formal definition of syntax and semantics, parsing techniques, scope rules, parameter passing, recursion, type checking, and new language constructs. Prerequisites, assembly language programming and knowledge of some higher level language.

**346. COMPUTER SYSTEMS LABORATORY I**  
Introduction to digital logic as building blocks for computer system. Basic types of logic and their characteristics. Corequisite, ECE 210.  
*Credit, 1.*

**350. COMPUTER SYSTEMS LABORATORY II**  
Subunits of digital computer systems and their control. Registers, accumulators, arithmetic units, and memories and their interconnection. Prerequisite, ECE 346.

**354. COMPUTER SYSTEMS LABORATORY III**  
Project laboratory in advanced computer systems engineering including designs of integrated hardware/software systems and studies of current computer techniques. Prerequisite, ECE 350.

**356. INTRODUCTION TO AUTOMATA THEORY**  
Formal processes of computation. Computability, automata, algorithms, recursive functions. Formal systems, computing power of machines, and automata as examples of formal systems.

**360. COMPUTER GRAPHICS**  
Introduction to basic organization of computer driven graphical display systems. Methods for generation and manipulation of vectors and characters for real-time display. Data structures for picture and text processing. Prerequisites, assembly language programming and ECE 342.

**362. ENGINEERING CYBERNETICS**  
Introduction to several aspects of self-organizing systems and pattern recognition including machine intelligence, adaptation, learning, and self repair.

**366. SIMULATION OF DYNAMIC SYSTEMS**  
Use of analog computers, high level languages and digital computation for simulation purposes.

**368. ADVANCED SWITCHING THEORY**  
Contemporary topics in digital switching theory and logical design. State-of-the-art techniques in computer hardware design. Prerequisite, ECE 210.

**385. 386. SPECIAL PROBLEMS**  
Individual study of a selected problem for qualified students. By arrangement with members of the department. *Credit, 1-6.*

**394. PROFESSIONAL SEMINAR**  
Engineering professionalism: lectures and discussions relating to the manner and methods by which the graduating engineering student enters the professional world. Engineering and society: discussions of the status and role of the engineer in society and social, political and economic implications of modern technology. Prerequisite, junior standing.  
*Credit, 1.*

**398. SENIOR HONORS**  
Senior research, thesis option. By arrangement with Department and/or Honors Office.  
*Credit, 4.*

**399. SENIOR HONORS**  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office.  
*Credit, 1-5.*

## Industrial Engineering and Operations Research

*Head of Department: Professor Richard W. Trueswell. Professors Balintfy, Giglio, Miser, Rising; Associate Professors Davis, Duffy, Kaminsky, Kroner, Lippert, Rikkers; Assistant Professor Sadowski.*

### SOPHOMORE YEAR

|                                          |                |
|------------------------------------------|----------------|
| <b>1st Semester</b>                      | <i>Credits</i> |
| Humanities Elective                      | 3              |
| PHYSIC 162, General Physics II           | 4              |
| MATH 165, Multivariable Calculus         | 3              |
| IE 151, Problems and Model Formulation   | 3              |
| ECON 103, Introduction to Microeconomics | 3              |
|                                          | <hr/> 16       |

|                                            |                |
|--------------------------------------------|----------------|
| <b>2nd Semester</b>                        | <i>Credits</i> |
| Humanities Elective                        | 3              |
| ENGL 331 Technical Writing                 | 2              |
| Basic Science Elective                     | 3 or 4         |
| MATH 167, Intr. to Linear Algebra          | 3              |
| IE 353, Industrial Engineering Economics I | 3              |
|                                            | <hr/> 14 or 15 |

### JUNIOR YEAR

|                                             |                |
|---------------------------------------------|----------------|
| <b>1st Semester</b>                         | <i>Credits</i> |
| IE 379, Operations Research I               | 3              |
| IE 271, Basic Probability for Engineers     | 3              |
| IE 354, Industrial Engineering Economics II | 3              |
| Economics Elective                          | 3              |
| Elective*                                   | 3              |
|                                             | <hr/> 15       |

|                                              |                |
|----------------------------------------------|----------------|
| <b>2nd Semester</b>                          | <i>Credits</i> |
| IE 380, Operations Research II               | 3              |
| IE 272, Principles of Engineering Statistics | 3              |
| IE 273, Simulation                           | 3              |
| IE 260, Design of Man-Machine Systems I      | 3              |
| Elective*                                    | 3              |
|                                              | <hr/> 15       |

### SENIOR YEAR

|                                          |                |
|------------------------------------------|----------------|
| <b>1st Semester</b>                      | <i>Credits</i> |
| IE 378, Production Control               | 3              |
| IE 261, Design of Man-Machine Systems II | 3              |
| Electives*                               | 9              |
|                                          | <hr/> 15       |
| <b>2nd Semester</b>                      | <i>Credits</i> |
| Humanities Elective                      | 3              |
| Electives*                               | 12             |
|                                          | <hr/> 15       |

\*These 27 credit hours of electives must satisfy the following: 12 from any courses offered for credit in the University, nine in recognized engineering science courses (must include a sequence of at least two courses) and six in industrial engineering and/or engineering science.

**151. PROBLEMS AND MODEL FORMULATION**  
Introduction to Industrial Engineering (IE) and Operations Research (OR). Practical problems that arise in these fields; how theoretical models have been developed to help with their solutions. Survey of the main currents of IE and OR developed further in later courses. Insights into the varied pursuits of professionals in these fields.

**253. METHODS AND STANDARDS ENGINEERING**  
The principles involved in the simplification of the work pattern and the design of the work place, and in the establishment of production standards. 3 class hours. 1 3-hour laboratory period. Prerequisite, IE 271, previously or concurrently. *Credit, 4.*

**256. DATA PROCESSING AND INFORMATION HANDLING SYSTEMS**  
Principles and applications of data processing and electronic computer systems for use by industrial engineers as a management tool for control and decision making. Prerequisite, permission of instructor.

**260. DESIGN OF MAN-MACHINE SYSTEMS I**  
Introduction to principles of human factors engineering. Anthropometric, physiological and psychological data sources. Data gathering and analysis techniques useful to design-

ers and industrial engineers. Occupational health and safety standards. Includes lectures, demonstrations and experiments. Project option.

#### 261. DESIGN OF MAN-MACHINE SYSTEMS II

Human factors data applications to design of equipment and industrial urban and vehicle environment. Decision processes, communication. Problems of layout in industry, hospitals, etc. Involves more complex problem application than IE 260. Includes lectures, demonstrations and experiments. Project option. Prerequisite, IE 260 or permission of instructor.

#### 271. BASIC PROBABILITY FOR ENGINEERS

Probability theory including; sample spaces; discrete and continuous random variables; functions of random variables; marginal and joint probability, density and cumulative distribution functions; and moments. Prerequisite, MATH 165.

#### 272. PRINCIPLES OF ENGINEERING STATISTICS

Statistical principles as applied to engineering problems including; estimation, hypothesis testing, analysis of variance, design of experiments, sampling plans, statistical quality control. Prerequisite, IE 271.

#### 273. INTRODUCTION TO SIMULATION METHODS

(See GB FIN 273.)

#### 286. INDUSTRIAL ENGINEERING PRINCIPLES

Organization, plant location, plant layout, industrial costs, production control, production standards, incentives. For students other than industrial engineering majors. Prerequisite, junior standing.

#### 288. MOTION AND TIME STUDY

For junior and senior students outside the industrial engineering field. 2 class hours, 1 3-hour laboratory period. Prerequisite, junior standing.

#### 341. HOSPITAL INDUSTRIAL ENGINEERING I

Introductory course in the application of Industrial Engineering techniques to hospital management. Emphasis on the institution of Industrial Engineering programs in hospitals and the choice of suitable projects. Guest lecturers.

#### 342. HOSPITAL INDUSTRIAL ENGINEERING II

A projects course based upon material covered in IE 341. Study of previous Industrial Engineering projects in hospitals, followed by each student conducting a project of his or her own in a local hospital. Prerequisite, IE 341.

#### 353. INDUSTRIAL ENGINEERING ECONOMICS I

Emphasis on cost control in industrial operations. Topics include an introduction to accounting principles and financial record keeping methods, determination of costs of all aspects of manufacturing, inventory management, and budgetary planning and control. Open to all technically-oriented students. Prerequisite, ECON 100-103.

#### 354. INDUSTRIAL ENGINEERING ECONOMICS II

An introduction to economic problems faced by engineers, comparison of alternatives in engineering projects, use of discounted cash flow techniques, breakeven and minimum cost points, and economic selection and replacement of structures and machines; decisions made in the face of risk and uncertainty. Instruction wherever advantageous by the case method. Intended as a service course for all technically-oriented individuals.

#### 360. SAFETY ENGINEERING

Design of equipment facilities and processes to minimize accidents. Evaluation and design of fire prevention equipment and accident control procedures in organizations.

#### 375. JOB EVALUATION

The principles used to determine an evaluation of all occupations in order to establish an equitable rating between them, to establish sound wage and salary policies. Prerequisite, IE 151. Credit, 2.

#### 376. TIME STUDY

The principles involved in the establishment of production standards and their application in the management functions of cost accounting, estimating, production control incentives, budgetary control. Prerequisite, IE 151 concurrently except for Business Administration majors.

#### 377. LAYOUT AND DESIGN OF INDUSTRIAL FACILITIES

The principles applying to plant layout, materials handling, and plant location. Modes of layout presentations illustrated by means of a student project. Prerequisites, M&AE 102, and IE 151, or equivalents.

#### 378. PRODUCTION PLANNING AND CONTROL

Analysis of quantitative and qualitative techniques for production planning and control. Emphasis on their application to various production systems. Prerequisites, IE 272, 353, 380.

#### 379. OPERATIONS RESEARCH I

The formulation and analysis of deterministic models for decisions including linear programming, network, integer programming and dynamic programming models. A science

course for engineers of all disciplines and other technically-oriented individuals. Credit not allowed students who have taken MGT 253, 254.

#### 380. OPERATIONS RESEARCH II

Stochastic models; decision theory, game theory, queueing theory, inventory theory, and general Markov processes. Credit not allowed students who have taken MGT 253, 254. Prerequisites, IE 271, 379.

#### 382. WORK SIMPLIFICATION

The principles involved in the simplification of means of doing work and in the application and use of these principles. 1 class hour, 1 3-hour laboratory period. Prerequisites, M&AE 268, and IE 376 concurrently. Credit, 2.

#### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

#### 394. PROFESSIONAL SEMINAR

Presentation of papers on important subjects and recent developments. 1 class hour. Prerequisite, senior standing.

#### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

#### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

### Mechanical Engineering

Head of Department: Professor J. Edward Sunderland. Professors Bates, Boothroyd, Crossley, Day, Dittfach, Dixon, Picha, Poli, Zahradnik; Associate Professors Ambs, Costa, Cromack, Goss, Kirchhoff, McGowan, Nelson, O'Byrne, Patterson, Ritter, Russell, Umholtz, Wilson, Zinsmeister; Assistant Professors Jakus, Murch.

Mechanical engineers use the principles of dynamics, solid mechanics, fluid and gas dynamics, heat transfer, thermodynamics, and materials science together with mathematical and computer methods for application to research, development, design and management in industry, government, and engineering education.

Students majoring in mechanical engineering may choose among several alternative options, all of which are fundamental and flexible so that students may prepare for either professional employment or graduate study.



## SOPHOMORE YEAR

| 1st Semester                          | Credits |
|---------------------------------------|---------|
| Social Science or Humanities Elective | 3       |
| MATH 165                              | 3       |
| M E 144, Mechanics I                  | 3       |
| M E 167, MAE Lab I                    | 3       |
| PHYSIC 162                            | 4       |
|                                       | 16      |

| 2nd Semester                              | Credits |
|-------------------------------------------|---------|
| Humanities Elective                       | 3       |
| MATH 231                                  | 3       |
| M E 135, Introd. to Materials Science     | 3       |
| M E 137, Introd. to Materials Science Lab | 1       |
| M E 145, Mechanics II                     | 3       |
| M E 163, Thermodynamics I                 | 3       |
|                                           | 16      |

## JUNIOR YEAR

| 1st Semester                             | Credits |
|------------------------------------------|---------|
| M E 235, Materials and Manufacturing     | 3       |
| M E 237, Materials and Manufacturing Lab | 1       |
| M E 246, Mechanics III                   | 3       |
| M E 264, Thermodynamics II               | 3       |
| ECE 141, Circuits I                      | 4       |
| Technical Elective                       | 3       |
|                                          | 17      |

| 2nd Semester             | Credits |
|--------------------------|---------|
| M E 279, MAE LAB II      | 3       |
| M E 293, ME Design I     | 3       |
| M E 265, Fluid Mechanics | 3       |
| ECE 142, Circuits II     | 4       |
| Technical Elective       | 3       |
|                          | 16      |

## SENIOR YEAR

| 1st Semester                        | Credits |
|-------------------------------------|---------|
| M E 254, 268, 283, 295 (choose one) | 3       |
| M E 284, MAE Analysis I             | 3       |
| Soc. Sci. Elective                  | 3       |
| Technical Elective                  | 3       |
| Technical Elective                  | 3       |
|                                     | 15      |

| 2nd Semester          | Credits |
|-----------------------|---------|
| Math. Elective        | 3       |
| Science Elective      | 3       |
| Technical Elective    | 3       |
| Soc. Science Elective | 3       |
| Humanities Elective   | 3       |
|                       | 15      |

## MATERIALS MAJOR

### JUNIOR YEAR

| Second Semester               | Credits |
|-------------------------------|---------|
| M E 265, Fluid Mechanics      | 3       |
| PHYSIC 319 or M E 385         | 3       |
| Math Elective                 | 3       |
| ECE 201, Electronic Materials | 3       |
| Technical Elective            | 3       |
|                               | 15      |

## SENIOR YEAR

|                          | Credits |
|--------------------------|---------|
| M E 308, Physical Metal. | 3       |
| CHEM 285, Physical Chem. | 3       |
| Soc. Sci. Elective       | 3       |
| Technical Elective       | 3       |
| Technical Elective       | 3       |
|                          | 15      |

|                                | Credits |
|--------------------------------|---------|
| CHE 370, Polymer Science       | 3       |
| M E 309, Mechanical Properties | 3       |
| Technical Elective             | 3       |
| Soc. Sci. Elective             | 3       |
| Humanities Elective            | 3       |
|                                | 15      |

\*NOTE: One of the technical electives must be selected from the following, M E 248, Structures; M E 278, Propulsion; or M E 315, Aerodynamics. Note that M E 274 is a prerequisite for M E 315. The M E Department faculty has developed a new general program in Mechanical Engineering, plus two other programs of concentrated studies in the Energy and Manufacturing areas. Students majoring in mechanical engineering also may select with approval and assistance of their faculty advisor programs emphasizing aerodynamics, design, materials study, business, bio-medical, or aquacultural subjects.

Prospective Mechanical Engineering students are advised to contact the department office in Room 213, Engineering Laboratory, for current program information.

## SUPPLEMENTARY RULES AND PROCEDURES

1. *Honors* — Sophomore, junior, or senior students who are selected for their outstanding performance by the Undergraduate Committee are eligible to participate in the Department's Honors program. Curriculum, other than School and University requirements, is completely open subject to the approval of the Honors Adviser, the Undergraduate Committee and Department Head. It is expected that Honors students will cover the Departmental core material but not necessarily by taking the regularly specified courses. Special Departmental recognition will be extended to the Honors students.

2. *ROTC* — No ROTC credits are acceptable in fulfillment of the 128 credit hour degree requirements of the Department.

3. *Non-Technical Electives* — Students may substitute one Non-Technical Elective for a Technical Elective provided the student presents evidence in writing that such a substitution is beneficial to the planned pro-

gram. The substitution must have the approval of the student's Advisor and the Department Head.

4. *Technical Electives* — Technical electives may be satisfied by upper level courses in Engineering, Mathematics, Computer Science, or Physics, or by upper or lower level courses in Chemistry or the Life Sciences.

5. *Mathematics Electives* — Mathematics electives may be satisfied by upper level Mathematics or Computer Science courses.

6. *Technical Communication* — Any student paper or report considered poor on the basis of technical communication by any instructor will be submitted to a Technical Communication Committee for review, comment, and recording. Such reports will be required to be redone. Students who show consistently poor communications performance may be required by the Committee to take a course in Technical Writing in their senior year.

7. *Pass/Fail Regulations* — Students may not take required M E courses on P/F basis. Technical, social science, and humanities may be taken P/F.

### 101 (I). ENERGY AND MAN (E)

Energy and its role in a technological society. The fundamental laws of energy and energy conversion. Secondary environmental effects of energy production and transmission. Energy resources and energy management. Not open to engineering majors.

### 102 (I). MATERIALS AND CIVILIZATION (E)

A survey of the contributions that materials have made to our past and present-day civilization. Case studies of ancient as well as contemporary items used to demonstrate the properties which make materials useful. How these properties depend upon the internal structure of materials. Fabrication of desired items from material and the problems of their disposal. Not open to engineering majors.

### 135 (I), (II). INTRODUCTION TO MATERIALS SCIENCE

The atomic and molecular phenomena responsible for the behavior of materials. The relationship between the atomic structure of materials and their behavior is emphasized. Prerequisite, CHEM 111.

### 137 (II). INTRODUCTION TO MATERIALS SCIENCE LABORATORY

Laboratory work to illustrate the concepts and principles of materials science. Prerequisite,



M E 135 concurrently. 1 3-hour laboratory period. Credit, 1.

**144 (I), (II). MECHANICS I (STATICS)**

A vector treatment of the equilibrium of particles and rigid bodies. Topics include: vector algebra, forces, moments, couples, equations of equilibrium, free-body diagrams, graphical techniques, constraints, structures and mechanisms, friction, centroids and moments of inertia, the method of virtual work. Prerequisites, MATH 132, PHYSIC 161.

**145 (I), (II). MECHANICS II (STRENGTH OF MATERIALS)**

Notions of stress, strain, and Mohr's circle. Tension shear and torsion. Plane stress and plane strain; moments of inertia. Shear force and bending moment diagrams. Deflection of beams; indeterminate beams; Castigliano's principle; plastic bending of beams. Mechanical properties of materials. Prerequisite, M E 144.

**163 (I), (II). THERMODYNAMICS**

The laws of thermodynamics introduced and applied to various energy-transforming devices. Property relations. Emphasis on the science of thermodynamics, providing a background for further study in those areas that involve thermodynamic principles. Prerequisites, PHYSIC 162, MATH 165.

**167 (I), (II). MECHANICAL AND AEROSPACE ENGINEERING LABORATORY I**

Some basic mechanical engineering measurement techniques, introduction to statistical analysis of engineering data, and technical report writing. Prerequisites, MATH 136 and digital computer programming (ENGIN 103-104 or equivalent level). 1 hour lecture, 1 hour recitation. 1 3-hour laboratory period.

**200. TECHNOLOGY AND SOCIETY**

History of technology, criticisms of modern technology, technological change and assessment, and the role of the engineer and his or her professional organizations.

**220 (I). MACHINING AND MACHINE TOOLS**

Fundamentals of metal cutting including temperatures generated and dynamic stability of the cutting process. Lubrication and wear of cutting tools and cutting conditions for maximum production or minimum cost. Design of machine tools. Numerical control and economics of machine tools. Prerequisite, senior standing.

**221 (II). AUTOMATION IN MANUFACTURING**

In-depth study of the automatic assembly process including feeding and orienting of parts and the performance and economics of assembly systems. Design of parts and prod-

ucts for automatic assembly. Prerequisite, senior standing.

**235 (I). MATERIALS AND MANUFACTURING**

Introduction to casting, forming, cutting, and joining processes for metals and plastics. Includes the economics, relative advantages and limitations of the processes. Prerequisite, M E 135 and 145.

**237 (I). MANUFACTURING PROCESSES LABORATORY**

Experiments, workshops and short experimental projects based on the topics covered in M E 235. Emphasis on experimental technique and presentation of results. Prerequisite, M E 235 concurrently.

**246 (I), (II). MECHANICS III (DYNAMICS)**

A vector treatment of dynamics. Kinematics of a particle in two- and three-dimensions. Dynamics of a particle; momentum, moment of momentum, and work-energy. Rigid bodies in plane motion; kinematics, and dynamics. Relative motion. Prerequisite, M E 144.

**248 (II). STRUCTURES FOR MECHANICAL AND AEROSPACE ENGINEERS I**

Introduction to the load and temperature environment of structures. Review of stress and strain with an introduction to the theory of elasticity. Theories of bending, extension, torsion and shear of slender beams without structural discontinuities. Introduction to work-energy principles and their application to the deflection and stress analysis of complex structures. Examples from the fields of mechanical and aerospace engineering. Prerequisite M E 145.

**249 (I). STRUCTURES FOR MECHANICAL AND AEROSPACE ENGINEERS II**

A continuation of M E 248. Elastic instability. Applications to axially symmetrical problems, curved beams and stress concentrations. Applications to plates and shells. Introduction to problems involving viscous and plastic behavior. Numerical methods. Prerequisite, M E 248, or permission of instructor.

**254 (I). PRODUCT DESIGN I**

Human values in design. Central philosophy of product design, with emphasis on the relation between technical and human values, creativity, and design methodology. Laboratory includes development of simple product concepts visualized in rapidly developed three-dimensional mockups. 2 class hours, 2 2-hour laboratory periods.

**255 (II). AQUACULTURAL ENGINEERING SYSTEMS**

Rate theory and similitude in the scale-up of biological processes. Case study of biological data used in the derivation of useful engineer-

ing system design relationships for the culture of mollusks. A bioengineering comparison of several systems used in aquaculture. Field trip to inspect an aquacultural project in operation.

**257 (II). PRODUCT DESIGN II**

Continuation of M E 254. Product Design I. 2 class hours, 2 2-hour laboratory periods.

**264 (I), (II). THERMODYNAMICS II**

Application of the laws of thermodynamics to energy conversion devices. Introduction to irreversible thermodynamics. Prerequisite, M E 163.

**265 (I). FLUID MECHANICS**

Vector approach to the fundamentals of fluid dynamics, including the topics of fluid statics, kinematics of fluids, potential flow, vorticity, dimensional analysis. Introduction to viscous fluids and compressibility. Prerequisite, M E 163.

**268 (II). KINEMATICS**

Mechanism, including velocity and acceleration diagrams, instant centers, gear teeth and gear trains, cams, and various speed transmissions. Prerequisite, M E 246. 2 class hours, 1 3-hour laboratory period.

**274 (II). FLIGHT VEHICLE PERFORMANCE**

Aircraft performance static and maneuvering. Fundamental astronautics, two-body problem, transfer orbits, rendezvous, intercept, lunar and interplanetary trajectories.

**275 (II). THERMAL ENVIRONMENTAL ENGINEERING**

A comprehensive treatment of refrigeration, psychrometrics, heat transfer including solar radiation, air conditioning theories and calculations with practical applications. Prerequisite, M E 264.

**276 (II). COMBUSTION**

Phenomenological study of combustion processes in flowing systems. Prerequisite, M E 264.

**277 (I). INTRODUCTION TO PROPULSION POWER PLANTS**

Thermodynamic and performance aspects of reciprocating gasoline and diesel engines. Prerequisite, M E 264.

**278 (II). AEROSPACE PROPULSION**

Primary and auxiliary power sources. Matching of air-breathing and rocket motor with vehicle. Electrical and nuclear propulsion systems. Prerequisite, M E 264, 265.

**279 (II). MECHANICAL AND AEROSPACE ENGINEERING LABORATORY II**

Basic concepts of instrumentation as applied

to mechanical engineering measurements. Topics include basic meters, transducers, and an introduction to analog computation. Prerequisites: ECE 142 concurrently, M E 264, M E 265, M E 167, and MATH 231. 1 hour lecture, 1 hour recitation, 1 3-hour laboratory period.

**282 (I). HEAT TRANSFER**

Fundamental principles of heat transfer by conduction, radiation, and convection. Methods of evaluating heat transfer rates and predicting operating temperatures. Prerequisites: M E 264, MATH 231, and computer programming experience.

**283 (I). MACHINE DESIGN**

Principles of the design of various machine parts; economy of manufacture, safety, styling, invention and creativity. Prerequisites: M E 235, 237, and 293.

**284 (II). MECHANICAL AND AEROSPACE ENGINEERING ANALYSIS I**

Engineering problem solving emphasizing problem recognition and formulation, simplifying assumptions, and valid analytical processes. Prerequisite, MATH 165.

**285 (I). VIBRATIONS I**

An introduction to the analysis of vibration of linear systems with emphasis on physical concepts rather than abstract mathematics. The vibrations of machines and machine structures including the setting-up and solution of the differential equations of motion for a wide variety of vibratory systems. Ways of reducing vibration including balancing, active and passive isolation, absorption, and damping. Laboratory demonstrations. Prerequisite, M E 246.

**286 (II). ADVANCED MACHINE DESIGN**

Continuation of 283. Additional elementary parts and some complete machines. Emphasis on invention and creativity. Prerequisite, M E 283. 2 class hours, 1 3-hour laboratory period

**287 (I). GAS DYNAMICS**

Continuous and discrete media. Compressible flow equations and compressibility effects. Flow in variable area ducts, normal and oblique shocks. Two dimensional flow. Applications. Prerequisites, M E 163 and 265.

**288 (I). PHYSICS OF SOLIDS**

Mechanical, electrical, magnetic and thermal properties of engineering materials. Prerequisites, CHEM 112 or 114, PHYSIC 162 or 125 or their equivalents.

**291 (II). MECHANICAL AND AEROSPACE ENGINEERING ANALYSIS II**

Continuation of M E 284. Emphasis on more complex problems and more advanced mathematical methods. Prerequisite, M E 284.

**293 (II). MECHANICAL ENGINEERING DESIGN I**

Introduction to the engineering design process, inventiveness, optimization, and decision-making. Prerequisite, M E 284. 2 class hours, 1 3-hour laboratory period.

**294. MECHANICAL AND AERO-SPACE SYSTEMS ANALYSIS**

Application of engineering analysis techniques to large scale systems. Concepts and methodology of systems engineering. Prerequisite, ECE 142 or permission of instructor.

**295 (I). MECHANICAL AND AEROSPACE ENGINEERING DESIGN**

Application of fundamentals and technology to complex design projects. Prerequisite, senior standing. 1 class hour, 2 3-hour laboratory periods.

**297 (I). LUBRICATION, FRICTION, AND WEAR**

Hydrodynamic and boundary lubrication, adhesive, abrasive and hysteretic friction and wear processes are analyzed. Applications in the design of bearings, seals, gears, and other systems involving surfaces in relative motion.

**308 (I). PHYSICAL METALLURGY PRINCIPLES**

Principles underlying the structure and behavior of metals. Atomic arrangements, crystalline imperfections. Equilibrium and non-equilibrium phase relationships in one- and two-component systems. Kinetics of diffusion and nucleation. Phase transformations, heat treatment and hardenability. Prerequisite, M E 135.

**309 (II). MECHANICAL PROPERTIES OF METALS, POLYMERS, AND GLASS**

The mechanical properties of metal, polymers, and glass and the mechanisms which control these properties. Topics include: elasticity and its relationship to bonding, plasticity in terms of dislocation theory, time dependent flow of polymers and metals, brittle fracture in metals and glass, effect of alloy additions on metal properties. Prerequisite, M E 135.

**315. AERODYNAMICS**

Application of theoretical fluid mechanics to aerodynamics including topics of theory of lift; finite wing theory; the effect of compressibility and viscosity on lift and drag; slender body theory. Prerequisite M E 265 or equivalent.

**316. STABILITY AND CONTROL OF VEHICLES**

Introduction to the general concept of stability of motion. The stability of motion of air, space and ground vehicles. Prerequisite, M E 274

**350 (II). X-RAY DIFFRACTION**

Principles of crystallography. X-ray diffraction. Prerequisite, M E 308.

**385, 386. SPECIAL PROBLEMS**

Individual study of a selected problem for qualified students. By arrangement with members of the department. *Credit, 1-6*

**398. SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. *Credit, 4.*

**399. SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. *Credit, 1-5.*



# College of Food and Natural Resources

Arless A. Spielman, *Dean*; Ernest M. Buck, *Associate Dean*; Gene McMurtry, *Associate Dean*; John A. Naegele, *Associate Dean*; John W. Denison, *Assistant Dean*; D.N. Maynard, *Assistant Dean*.

## Entomology

*Head of Department:* Professor T. Michael Peters. Professors Becker, Edman, Hanson; Assistant Professors Barbosa, Hagedorn, Stofolano.

A departmental graduation requirement is successful completion of at least 15 semester hours of credit in junior-senior courses (those numbered 200-399) offered by the Department. The flexibility allowed by this requirement enables students in consultation with their advisors to build an individual program of courses appropriately tailored to their future goals.

For students anticipating research or teaching careers which require graduate study, electives should stress basic sciences and liberal arts courses in botany, chemistry, English, modern languages, statistics, and zoology. Students interested in medical entomology should include microbiology, parasitology, and public health courses. For work in pest control, extension quarantines or agricultural chemicals, electives from plant pathology and soil sciences, forestry, business, communication studies, and applied entomology are recommended.

### 126 (I), (II). INSECTS AND MAN (E)

A survey of the field; structure, development, evolution, classification, biology, and natural control of insects. 3 class hours.

### 150 (I). PRINCIPLES OF APPLIED ENTOMOLOGY

A broad basic course for both majors and non-majors. General principles of pest control stressed, instead of "how-to-do-it" details. 2 class hours, 1 2-hour laboratory period.

**260 (II). FOOD AND STRUCTURAL PESTS**  
Identification, biology and specific control measures of arthropod and rodent pests in structures, foods, fabrics, and miscellaneous products during transportation and in homes. A prior course in zoology or entomology desirable. 2 class hours, 1 2-hour laboratory period.

**266 (I). PRINCIPLES OF APICULTURE**  
Honeybees and their relatives, structure and biology of bees, methods of management, diseases, pollination, queen rearing, honey production, and history of beekeeping. Given in alternate years. Prerequisite, Ent 126 or permission of instructor. 2 class hours. 1 2-hour laboratory period.

### 272 (II). FOREST AND SHADE TREE INSECTS

Structure and classification of, and damage by, different types of tree insects. Identifica-

tion, biology, and control of important pests. Oriented toward forestry and arboriculture juniors and seniors. Prerequisites, ZOOL 101 plus FOREST 212 or PL SOIL 235, 236. Two class hours, one four-hour laboratory period.

Credit, 4.

### 276. ANIMALECOLOGY

The basic principles and concepts that are operative at the various levels of biological organization (organismic, population, community, and ecosystem). Topics include: ecology and natural selection, behavioral ecology, human ecology, and current ecological problems. 3-hour lecture (optional 1-credit laboratory).

Credit, 3 (or 4).

### 295 (I), (II). EVOLUTION

The course and dynamics of both inorganic and organic evolution. The implications of evolutionary concepts on human philosophy, behavior and welfare.

### 311. INSECT BEHAVIOR

The specific behaviors of insects, analyzed in view of current experimental research, and used to demonstrate various neurobiological principles. An understanding of the behavioral dynamics of a specific insect as a basis for examining how the organism's behavior insures survival under the diverse environmental stresses. 3-hour lecture (optional 1-credit laboratory).

Credit, 3 (or 4).

### 355 (I). CLASSIFICATION OF INSECTS

The identification of insects, including immature stages. First semester: Orthoptera, Hemiptera, Coleoptera; second semester: other orders. Either semester may be elected independently. Given in alternate years. Prerequisite, permission of instructor; ENT 126 desired. 3 2-hour laboratory periods.

### 357 (I). INSECT MORPHOLOGY

The external anatomy of the major orders, with stress on phylogenetic relationships, as background for subsequent work in taxonomy and physiology. Given in alternate years. Prerequisite, permission of instructor; ENT 126 desired. 1 class hour, 3 2-hour laboratory periods.

Credit, 4.

### 374 (II). MEDICAL AND VETERINARY ENTOMOLOGY

Relationships of insects and their allies to the health of man and animals. The classification, biology and control of these pests. Given in alternate years. Prerequisite, ENT 126 or permission of instructor. 1 class hour, 2 2-hour laboratory periods.

### 380 (II). INSECT CONTROL

The science of pest control. Biological control and the need, economics, effectiveness, and hazards of insecticides. Given in alternate years. Prerequisite, ENT 126. 1 class hour, 2 2-hour laboratory periods.

### 382 (II). INSECT PHYSIOLOGY

The organ systems, their functions in nutrition, reproduction, respiration, and growth and the relationship of physiology to behavior. Given in alternate years. Prerequisites: ENT 126 and permission of instructor. 2 class hours, 2 3-hour laboratory periods. Credit, 4.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-4.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 1-4.

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-4.

## Environmental Sciences

*Head of Department:* Commonwealth Professor Warren Litsky. Professor Gunner; Associate Professors Coler, Deubert, Lockwood Walker.

The Environmental Sciences major is a flexible, interdisciplinary program which emphasizes depth of study in environmental biology. Introductory Environmental Biology followed by Methods of Pollution Measurement are recommended for the sophomore year. Departmental requirements are outlined as follows: a strong background in biology; chemistry, physical science and mathematics; eight courses in the Department of Environmental Sciences, four of which are upper level; a 12-credit conjugate area of study. Students should seek advice early in their academic programs in order to construct an individualized course of study appropriately tailored to their future goals, and which satisfies departmental requirements.

### 201. INTRODUCTORY ENVIRONMENTAL BIOLOGY (E)

The response of the biota to environmental stress induced by air, water and soil pollutants. Prerequisites, BOTANY 101, ZOOL 101 or equivalent.

### 215. AGRICULTURE AND ENVIRONMENTAL POLLUTION

Agricultural pollutants and pollutants attributed to agriculture, their sources and the behavior in the environment. Major problem analysis of cases involving real and alleged agricultural pollution.

### 275. STREAM MANAGEMENT

Field methods for the preservation and restoration of the natural character of stream. Emphasis on habitat management. Prerequisite,



sites, ZOOL 101 or GEOL 100 or 101. One lecture and 1 3-hour laboratory. *Credit, 2.*

**302. ADVANCED POLLUTION BIOLOGY**  
The measurement and evaluation of the biotic response to environmental stress of the terrestrial and aquatic biocoenoses induced by air, water and soil pollutants. Prerequisites, ENV SCI 201 or equivalent. 2 1-hour lectures, 2 3-hour laboratory, field trips, demonstrations. *Credit, 4*

**304. RIVER POLLUTION — BIOLOGICAL SURVEY METHODS**  
A field experience to assess water quality through the application of standard biological indices supplemented by chemical and physical analyses. Prerequisites, ENVSCI 302 or permission of instructor. Two 4-hour laboratories.

**315. MICROBIOLOGY OF THE SOIL**  
Soil microorganisms; their distribution, ecology and transformation of organic and inorganic substrates including pesticides. Microbiology of the rhizosphere and the biological equilibrium.

**316. MICROBIOLOGY OF AIR AND WATER**  
Microbial communities in air and water; their responses to environmental stress and their use as indices of environmental quality.

**385, 386. SPECIAL PROBLEMS**  
Individual study of a selected problem for qualified students. By arrangement with members of the department. *Credit, 1-6.*

**391, 392. SEMINAR**  
Topics of current Environmental Sciences interests. *Credit, 1-3.*

**398. SENIOR HONORS**  
Senior research, thesis option. By arrangement with Department and/or Honors Office. *Credit, 4*

**399. SENIOR HONORS**  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. *Credit, 1-5.*

## Food and Agricultural Engineering

*Head of Department:* Professor J. T. Clayton. Professors Light and Schwartzberg; Associate Professors C. Johnson, E. Johnson, Mudgett, Peleg, Rosenau, Whitney; Assistant Professor Pira.

**255 (I). AQUACULTURAL ENGINEERING**  
Rate theory and similitude in the scale-up of biological processes. Case study of biological data used in the derivation of useful engineering system design relationships for the culture of mollusks.

**261 (I), (II). HOUSING DESIGN AND CONSTRUCTION**  
Space arrangement, construction materials, construction problems, utilities, financing, maintenance and remodeling. Emphasis on planning and evaluation procedures and factors. 1 class hour, 1 3-hour laboratory period.

**281 (I). FUNDAMENTALS OF FOOD SERVICE SYSTEMS ENGINEERING**  
The fundamental engineering principles involved in the planning, equipping and operation of a commercial restaurant. Emphasis on application of these principles to specific situations within the kitchen.

**331 (I). INSTRUMENTATION**  
Instrumentation applied to research, covering recorders, indicators, controllers and transducers in general. Emphasis on applications and limitations. Prerequisite, PHYSIC 162 or equivalent. 2 class hours, 1 2-hour laboratory period.

**356 (I). CONTROL SYSTEMS FOR SOIL MOISTURE**  
Design of systems for soil drainage and crop irrigation; soil requirements, climatology and hydraulics as applied to engineering problems involved in these systems. 2 class hours, 1 2-hour laboratory period.

**361 (I). STRUCTURES AND RELATED EQUIPMENT**  
Fundamental aspects of planning modern farm structures; emphasis on design, environmental control and integration of mechanical equipment. 2 class hours, 1 2-hour laboratory period.

**365 (II). PHYSIOLOGICAL UNIT OPERATIONS**  
Introduction to physiological systems, studies of thermodynamics, fluid dynamics, heat transfer and mass transfer in biological systems, concepts in biological regulatory systems and biological engineering designs with specific examples. Prerequisites, Approval of department, or CH E 256, or M&AE 265 & 382.

**375 (I). FOOD PROCESSING SYSTEMS ANALYSIS**  
Continuous and batch processing systems for food and biological products, using flow analysis, systems analysis, scale-up, and simulation techniques. Analysis of machine operating principles, sanitary requirements, fabrication limitations and machine interrelations. Prerequisite, permission of instructor. 2 class hours, 1 2-hour laboratory period.

**376 (I). MECHANIZATION IN CROP PRODUCTION**  
Principles of operation, maintenance, and selection of farm tractors and field machinery; irrigation and drainage systems and equipment. Emphasis on management practices and

discussions. 1 class hour, 2 2-hour laboratory periods.

**381 (I). ELEMENTS OF PROCESS ENGINEERING**  
Fundamental engineering principles involved in the processing of biological materials; emphasis on heat transfer, mass and energy balances, refrigeration, psychrometry, properties of fluids and fluid flow. 2 class hours, 1 2-hour laboratory period.

**384 (I). UNIT OPERATIONS IN FOOD ENGINEERING**  
Application of engineering concepts to the processing and handling of biological materials, including evaporation, dehydration, irradiation, freeze drying, cost analysis, material handling, manual motion economy and packaging. 2 class hours, 1 2-hour laboratory period.

**385, 386. SPECIAL PROBLEMS**  
Individual study of a selected problem for qualified students. By arrangement with members of the department. *Credit, 1-6.*

**398. SENIOR HONORS**  
Senior research, thesis option. By arrangement with Department and/or Honors Office. *Credit, 4.*

**399. SENIOR HONORS**  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. *Credit, 1-5.*

## Food and Resource Economics

*Head of Department:* Professor N. Eugene Engel. Professors Christensen, Crossmon, Foster, Leed, Storey; Associate Professors Callahan, Jarvesoo, Lee, Marion, Spindler; Assistant Professors Conrad, Field, McDowell, Willis; Visiting Professor Allen.  
Majors will satisfy University and departmental graduation requirements as follows:

| University Core                             | Credits |
|---------------------------------------------|---------|
| Rhetoric                                    | 6       |
| Math/Natural Science                        | 9       |
| Humanities                                  | 9       |
| Social Sciences                             | 9       |
|                                             | <hr/>   |
|                                             | 33      |
| <i>Departmental</i>                         |         |
| MATH 110/F&R EC-177 or<br>STAT 121/ENGL 337 | 9       |
| ECON 103/104                                | 6       |
| F&R EC-110/206/261/226                      | 12      |
|                                             | <hr/>   |
|                                             | 27      |
| F&R EC - junior-senior electives            | 18      |
| Restricted electives                        | 12      |
|                                             | <hr/>   |
|                                             | 30      |
| Unrestricted Electives                      | 30      |
|                                             | <hr/>   |
|                                             | 120     |

**110 (I). WORLD FOOD AND NATURAL RESOURCES (D)**

Introduction to the natural, economic, and sociopolitical forces influencing world food and biological resource development. Potentials for meeting pressures on resources. 2 class hours, 1 2-hour discussion.

**177 (I). BASIC BIOMETRY (E)**

Introduction to applied statistical principles and techniques for biological data.

**206 (II). AGRICULTURAL ECONOMICS**

Intensive review of the agricultural sector. Application of economic principles to problems of production and marketing, elements of price making. Income problems of agriculture.

**226 (II). ENVIRONMENTAL ECONOMICS**

Issues relating to environmental aspects of land and water use. Emphasis on the economic implications of alternative courses of action as they affect both public and private sectors. Prerequisites, ECON 100 and 103 or equivalent background.

**261 (I). FOOD MARKETING SYSTEMS**

Structure of food marketing systems. Operating principles, significant product characteristics, role of specialized marketing firms, government programs and policies.

**265 (I). FOOD MERCHANDISING**

Economic analysis of factors, internal and external to the firm, influencing sales of food firms. Food industry development, consumer behavior, competitive strategies, and legal considerations.

**282 (I). WATER QUALITY ECONOMICS**

Principles for selection of welfare maximizing plans from among alternative pollution control policies and market and administrative decision-making processes for pollution control.

**303 (I). AGRICULTURAL BUSINESS MANAGEMENT**

Decision-making principles, management tools, analytical methods and their application to management problems of commercial farms and other agricultural firms. 2 class hours, 1 2-hour discussion.

**341 (I). PRICE THEORY AND ANALYSIS**

Price theory and analytic tools of economic analysis. Emphasis on application of quantitative techniques in the analysis of practical economic problems. Material related to managerial decision making.

**346 (II). REGIONAL COMPETITION AND MARKET INTERDEPENDENCY**

Interregional competition and interdependency in agricultural factor and product markets in the context of aggregate demand and supply by regions as affected by spatial considerations.

**352 (I). AGRICULTURAL POLICY**

Analysis of farm price support programs, programs for alleviation of rural poverty, food trade and aid policies, other topical issues.

**365 (II). ECONOMICS OF RURAL DEVELOPMENT**

The economic processes that shape rural communities and affect the rural/urban balance of society. Ideas from several economic specialties focused on rural regions and communities; emphasis on development of rural economic policies and programs and on identifying community evaluation techniques. Prerequisites: F&REC. 341 or equivalent or permission of instructor.

**368 (II). FOOD DISTRIBUTION ECONOMICS**

A critical analysis of the food industry; the legal and competitive framework, performance and public policy; management practices with respect to site selection, budgeting, merchandising, expense control and employee training and evaluation in food distribution firms.

**373 (II). RESOURCE AND CONSERVATION ECONOMICS**

Economic and institutional factors affecting land and water use. Land use planning. Elements of conservation economics.

**376 (II). MARINE RESOURCE DEVELOPMENT ECONOMICS**

Economic analysis of alternative plans for attainment of social goals in the development of coastal and offshore marine resources.

**381 (II). INTERNATIONAL AGRICULTURAL DEVELOPMENT**

Economic development of low income rural economies. Relation of agriculture to national economies. Exogenous and endogenous factors in development.

**385, 386. SPECIAL PROBLEMS**

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

**387. SPECIAL PROBLEMS IN RESOURCE ECONOMICS**

Individual study of resource economics problems. By arrangement with members of the department. Credit, 1-6.

**398. SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

**399. SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

**Food Science and Nutrition**

Head of Department: Professor F.J. Francis. Professors Buck, Fagerson, Hayes, Hultin, Nawar, Pellet. Adjunct Professor Schwartzberg. Associate Professors Beal, Bert, Clydesdale, Evans, Hunting, Levin, Potter, Sawyer. Adjunct Associate Professors Manning, Rosenau, Wright. Assistant Professors Johnson, Weatherholtz.

The Department of Food Science and Nutrition has two majors: 1) Food Science, and 2) Human Nutrition. A number of options are available, such as Food Science and Technology, Nutrition and Food Science, Community and Public Health Nutrition, Dietetics, Foods In Business, Computerization in Nutrition and Food Science, etc.

**101 (II). THE STRUGGLE FOR FOOD (E)**  
Modern advances in science in the growth, production, and use of both natural and synthetic foods in alleviating the world food crises.

**102 (I), (II). WORLD FOOD HABITS**  
The historical origins, scientific bases, and nutritional implications of current human eating habits throughout the world. Physiological and psychological factors, specific taboos, superstitions, prejudices, aversions, influence of modern production technology, etc.

**140 (I), (II). MAN AND NUTRITION (E)**  
Basic facts and principles of human nutrition. Application of this knowledge to maintenance of good health and vigor. Contemporary problems in human nutrition. For students not majoring in food science and nutrition.

**210 (I). MEAL MANAGEMENT AND SCIENTIFIC FOOD PRINCIPLES**

Meal management with emphasis on the nutritional, economic, time, ethnic, and cultural factors. Experimental application of the chemical and physical properties of food in food preparation. Prerequisite, CHEM 112 or equivalent. 2 class hours, 1 3-hour laboratory period.

**240 (I), (II). BASIC NUTRITION**

The basic principles of nutrition. The nutrients: energy, protein, vitamins, minerals and water, and their chemical and physiological roles in metabolism. Prerequisite, Organic chemistry or concurrent registration.

**241. METHODS OF NUTRITION RESEARCH**

Laboratory study of methods available for assessment of nutritional status and the intakes of nutrients. Prerequisite, FS&N 240. 3-hour laboratory periods. Credit, 2.

**251 (I). INTRODUCTORY FOOD SCIENCE**  
Primarily for department majors. Seminar on food manufacture, preservation, processing and distribution. Credit, 2.



**258 (I). ANIMAL PRODUCTS**

Principles of processing, handling, packaging and storage of animal and other protein foods. Chemical and structural aspects of muscle as they relate to quality evaluation and preservation. 2 class hours, 1 2-hour lecture-demonstration.

**275 (I), (II). SURVEY OF FOOD SCIENCE**

Introduction to food science, and its role in the world's food supply. The relationships between production, processing and consumption of foods, including principles and methods of preservation. Consumer issues, regulatory functions, quality and food usage, and future prospects for the food supply. 2 class hours, 1 2-hour laboratory period.

**312. EXPERIMENTAL FOODS**

Fundamental principles of food quality evaluation; development of independent research problems. Prerequisite: FS & N 210, Organic Chem or permission of instructor. 1 class hour, 2 3-hour laboratory periods.

**340. NUTRITION IN THE LIFE CYCLE**

Nutritional needs at various stages in the life-cycle, i.e. pregnancy and lactation, infancy, childhood, adolescence, adult life and the aged. Prerequisite, FS & N 240 or permission of instructor.

**342 (II). COMMUNITY NUTRITION**

Community response through its agencies and institutions, public, private, and voluntary, in providing nutrition care services and education. Prerequisite, FS & N 340 or permission of instructor. Lecture and Field Experience. Given alternate years. Credit, 1-3.

**343 (II). NUTRITIONAL PROBLEMS OF THE UNITED STATES**

The factors within the developed countries, especially the United States, resulting from and causing malnutrition. Obesity, coronary heart disease, food fads and quackery, food additives and unintentional residues. Prerequisite, FS & N 340 or permission of instructor.

**344 (I). NUTRITIONAL PROBLEMS OF DEVELOPING NATIONS**

Malnutrition in developing nations and its socioeconomic background. Protein-energy malnutrition in childhood, famine, vitamin and mineral deficiency diseases and the relationships with diets as consumed in such regions. The synergism between nutrition and infection and the role of international agencies in fighting malnutrition. Prerequisite, FS & N 340 or permission of instructor.

**345. NUTRITION IN DISEASE**

Physiological basis for therapeutic diets in certain diseases. Current medical and nutrition literature used. Prerequisite, FS & N 340, BIOCHM 220, ZOOL 135, or permission of instructor. Given alternate years.

**352. FOOD CHEMISTRY**

The chemistry of food products. Chemical, physical and biological changes in foods at the cellular and molecular levels during storage and processing. Emphasizes water, cell structure, carbohydrates and lipids of foods. Prerequisite, organic chemistry or concurrent registration.

**353. FOOD CHEMISTRY**

The chemistry of food products. Chemical, physical and biological changes in foods at the cellular and molecular levels during storage and processing. Emphasizes food proteins, enzymes, vitamins and flavor chemistry. May be taken separately from FS & N 352. Prerequisite, organic chemistry or concurrent registration.

**360. ADVANCED METHODS OF COMPUTERIZATION IN NUTRITION AND FOOD SERVICE**

The mathematical foundations of computations with food nutrient and recipe data. The data file structure of computerized food and nutrient accounting systems. The principle of mathematical optimizations techniques and its utilization in computerized menu planning and scheduling models. Laboratory work with computer applications. Prerequisite, FS & N 340, MGT 110 and MATH 115 or equivalents.

**361 (II). FOOD PROCESSING**

Introduction to the food industry, principles of processing and preservation in current usage. Statistical quality control procedures. 3 class hours, laboratories by arrangement.

**362 (I). FOOD PROCESSING LABORATORY**

Application and utilization of pilot plant equipment to study and evaluate principles of commercial practice in the food industry. Introduction to advanced techniques of food processing. 1 class hour, 1 4-hour laboratory period. Prerequisite, FS & N 361.

**365 (I). UNIT OPERATIONS**

Technical principles involved in the processing of food, milk and dairy products. 2 class hours, 1 2-hour laboratory period.

**366 (I). HYGIENIC PRINCIPLES OF FOOD HANDLING**

The application of hygienic principles to the preparation, processing and handling of foods. Emphasis on the training of supervisory personnel.

**367 (I), (II). FOOD MICROBIOLOGY**

Application of microbiological principles and methodologies to the quality control of foods. 2 class hours, 2 2-hour laboratory periods. Credit, 4

**371 (I). ANALYSIS OF FOOD PRODUCTS**

Physical, chemical, microbiological and

microscopical methods. Prerequisite, Analytical Chemistry, 2 class hours, 1 4-hour laboratory period.

**372 (II). OBJECTIVE ANALYTICAL METHODS AND INSTRUMENTATION**

Continuation of 371. Prerequisite, FS&N 371. 2 class hours, 1 4-hour laboratory period.

**374 (II). NUTRITIONAL EFFECTS OF FOOD PROCESSING AND PREPARATION**

The effects of preparation and processing on the nutritional value of foods. Leaching and destruction of vitamins and minerals, effects of heat and oxygen on carbohydrates, lipids, and proteins, available and unavailable nutrients consequent on processing, and potentially toxic compounds produced. Prerequisite, FS&N 240 or permission of instructor.

**380 (I), (II). SPECIAL TOPICS IN WORLD FOOD TECHNOLOGY**

Selected problems concerned with food science and allied areas in solution of world food problems. 2 class hours. Credit, 2.

**384 (II). SENSORY EVALUATION METHODS**

An introduction to sensory measurements in the evaluation and acceptance of foods. Panel tests and their statistical interpretations; taste, odor, color, and texture measurements. Methodology of consumer testing and statistical interpretation of data. 2 class hours, 1 2-hour laboratory period.

**385, 386. SPECIAL PROBLEMS**

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

**389. FIELD STUDY** Credit, 1-15.**391 (I), 392 (II). SEMINAR IN FOOD SCIENCE**

For seniors who major in Food Science and Nutrition. 2 class hours. Credit, 2.

**393 (II). SEMINAR IN NUTRITION**

Reports and discussion of current research studies in nutrition. Prerequisite, permission of instructor. Credit, 1.

**394 (I). SEMINAR IN FOOD**

Reports and discussion of current research studies in food. Prerequisite, permission of instructor. Credit, 1.

**398. SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4

**399. SENIOR HONORS**

Continuation of 398. Thesis mandatory. By



arrangement with Department and/or Honors Office. Credit, 1-5.

## Forestry and Wildlife Management

Head of Department: Professor Donald R. Progulski, Professors Abbott, C. F. Cole, Gatslick, MacConnell, Mader, Marra; Associate Professors Bond, Carlozzi, Dodge, Greeley, Hoadley, Kennelly, Larson, Reed, Rice, Wilson; Assistant Professors A. B. Cole, Fischer, Mawson, Parrish.

## FORESTRY

### 121 (II). TIMBER HARVESTING

Timber harvesting and primary conversion of wood products.

### 212 (I), (II). DENDROLOGY

Taxonomic features, silvical characteristics, and distribution of principal tree species of temperate North America. Permission of the instructor required by all non-forestry majors. 3 class hours, 2 2-hour laboratory periods.

Credit, 4.

### 216 (I). TREE GROWTH

An introduction to the development of tree root and shoot systems, wood production and distribution, phase changes and the relation of a tree to its environment. Prerequisite, BOTANY 100. 2 class hours.

Credit, 2.

### 223 (I). SILVICS

Principles of forest ecology as a foundation for silviculture and forest management, environmental factors; development of trees and forest communities; forest influences. FOREST 112 and FOREST 225 are required. 2 class hours, 1 4-hour laboratory period.

Credit, 4.

### 224 (I). FOREST SOILS

Effects of soil properties on tree growth; relationship of soils to silviculture, harvesting, watersheds, wildlife, and forest recreation; forest soil description, classification and mapping. 2 class hours, 1 4-hour laboratory period.

### 225 (I). January Intersession and Summer. THE ELEMENTS OF FOREST MENSURATION

The measurement of trees, stands, and forests products; practice in timber estimating and log scaling; collection and compilation of forest inventory data. 2 class hours, 1 4-hour laboratory period. Summer and January intersession course, 3 40-hour weeks.

### 226 (I). THE PRINCIPLES OF SILVICULTURE

Culture of forest crops; regeneration and intermediate cuttings, silvicides, slash disposal; planting, direct seeding, nursery management; interactions with forest manage-

ment for water, wildlife, and recreation. FOREST 223 required. Open to junior and senior forestry majors. Permission of instructor required by others. 3 class hours, 1 4-hour laboratory period.

Credit, 4.

### 227 (II). TREE PHYSIOLOGY

Growth and development during the life cycle of trees, emphasizing the whole-plant approach and phenomena best studied in trees; the physiological basis of silviculture. Prerequisite, BOTANY 211, or FOREST 216. 2 class hours, 1 3-hour laboratory period.

### 228 (II). FOREST HYDROLOGY

Principles and factors controlling the hydrologic cycle on forest lands. Review of forest watershed management research on the influence of soils, vegetation, and management practices on water yields and water quality. Watershed management as a part of integrated forest land management. 2 lectures, 1 3-hour laboratory recitation period.

### 229 (I). FOREST PROTECTION

Principles of protecting forests from fire, insects, disease, domestic animals, wildlife, and atmospheric agencies. Open to junior and senior forestry majors. Permission of instructor required by others.

### 231 (I). AERIAL PHOTOGRAMMETRY

The application of photogrammetry in forestry, wildlife biology, geography and other fields concerned with large land surfaces; photographic interpretation and map making from aerial photographs. 2 class hours, 1 4-hour laboratory period.

### 232 (II). FOREST TREE IMPROVEMENT

Tree introduction, geographic variation, tree selection, vegetative propagation, controlled pollination and hybridization, seed orchard management. Prerequisite, FOREST 212, 226. Permission of instructor required.

### 234. ADVANCED FOREST MENSURATION

The theory and application of sampling techniques in forest survey. Continuous Forest Inventory techniques; analysis of growth and yield techniques. Prerequisites, FOREST 225 and basic statistics. 2 class hours, 1 4-hour laboratory period.

### 235 (II). FORESTRY ECONOMICS

The application of economic principles to the allocation of land, labor, and capital in forest enterprises; marketing and pricing theory of forest crops. Prerequisite, ECON 103.

### 236 (I). FOREST RESOURCES POLICY

Forest policy in the United States; institutional, social, political and economic factors affecting forest resources policy development. Current policy problems. 2 class hours, 1 2-hour seminar.

### 239 (II). THE FOREST RESOURCES OF NORTH AMERICA

The forest resources of North America and their management for multi-purpose economic, and social benefits; regional physiography, climate, vegetation, demography and economic base; environmental, economic, and socio-political constraints affecting management. For seniors and graduate students with natural resource, regional planning, or similar backgrounds.

### 240 (II). PRINCIPLES OF FOREST MANAGEMENT

Multiple-use management of forest land for wood, water, wildlife, and recreation; organization of the forest for sustained-yield management; preparation of management plans. Prerequisite for the laboratory, FOREST 225. 3 class hours, 1 4-hour laboratory period. Laboratory period required for forestry majors.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department.

Credit, 1-6

### 391 (I), 392 (II). FORESTRY SEMINAR

Specialized study in a selected area of forestry. For seniors only.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office.

Credit, 4

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office.

Credit, 1-5

## NATURAL RESOURCES

### 100 (I) and Summer. CONSERVATION OF NATURAL RESOURCES

Conservation principles and their application to problems in soils, water, forests, wildlife, mineral and general landscape resources; relationship of conservation to national development.

### 302 (II). ECOLOGICAL PRINCIPLES OF RESOURCE PLANNING

Analysis of ecological principles and their relationship and importance to resource planning. State and federal conservation programs chosen for critical case study. Prerequisite, permission of instructor.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department.

Credit, 1-6

### 391 (I), 392 (II). NATURAL RESOURCES SEMINAR

Specialized study in a selected area of natural resources. For seniors only.

**398. SENIOR HONORS**  
Senior research, thesis option. By arrangement with Department and/or Honors Office.  
**Credit, 4.**

**399. SENIOR HONORS**  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office.  
**Credit, 1-5.**

## **WOOD TECHNOLOGY**

**201 (I). WOOD ANATOMY AND IDENTIFICATION**  
A basic anatomical study of wood elements, their structural characteristics and function; identification of woods. Prerequisite, **BOTANY 100**. 2 class hours, 1 3-hour laboratory period.

**202 (II). PRIMARY TIMBER CONVERSION**  
Survey of operations, principally sawmilling, in the primary conversion of logs into lumber and allied by-products; drying, grading, handling and market distribution of sawmill products. Not open to students in Forest Management except by special permission.

**203 (I). FOREST PRODUCTS**  
An overview of the contribution of the forest to man's requirements for shelter, paper products, furniture, food, and chemicals; emphasis on the sociological and economic importance and long range potential of forest fiber including recycling.

**204 (II). PROPERTIES OF WOOD**  
The physical and mechanical properties of wood and their importance in wood utilization. Techniques for physical measurement and mechanical testing. Prerequisite, **WDTECH 201**. 2 class hours, 1 3-hour laboratory period.

**206 (II). WOOD MACHINING TECHNOLOGY**  
Fundamental principles of knife and sawtooth action as applied to problems of severing, surfacing, and shaping; general survey of commercial wood machining equipment. Several field trips. Prerequisites, **WDTECH 201** and **204**. 2 class hours, 1 3-hour laboratory period.

**208 (I). WOOD SEASONING AND PRESERVATION**  
Properties of wood in relation to drying and preservation; theory and practice of air seasoning, kiln drying, and preservative treatment. Several field trips. Prerequisite, **WDTECH 204** recommended. 2 class hours, 1 3-hour laboratory period.

**211 (I). WOOD ADHESIVE TECHNOLOGY**  
Basic concepts, theories, and applied techniques of gluing wood and fibrous composites. Prerequisites, **WDTECH 201** and **204**.

**WDTECH 238** recommended. 2 class hours, 1 3-hour laboratory.

**212 (II). WOOD COATING TECHNOLOGY**  
Basic concepts and applied techniques in wood substrate surface modification, including materials and methods for finishing wood and fibrous composites. Prerequisites, **WDTECH 201** and **204**. Organic Chemistry recommended. 2 class hours, 1 3-hour laboratory period.

**238 (II). CHEMICAL PROCESSING OF WOOD**  
Introduction to the chemistry and surface phenomena of the principal products found in wood. Prerequisite, Organic Chemistry.

**385, 386. SPECIAL PROBLEMS**  
Individual study of a selected problem for qualified students. By arrangement with members of the department. **Credit, 1-6.**

**391 (I), 392 (II). WOOD TECHNOLOGY SEMINAR**  
Specialized study in a selected area of wood utilization and technology. For upperclass students only.

**398. SENIOR HONORS**  
Senior research, thesis option. By arrangement with Department and/or Honors Office.  
**Credit, 4**

**399. SENIOR HONORS**  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office.  
**Credit, 1-5.**

## **Wildlife and Fisheries Biology**

The first professional degree in Wildlife and Fisheries Biology is the master's degree; for this reason study toward the bachelor's degree should be regarded as a pre-professional program. Students who do not plan to enter graduate school are urged to meet with their advisors to select electives and plan their course of study accordingly. Students wishing to enroll in Wildlife Biology should declare the College of Food and Natural Resources as their major until requisite courses have been completed. Vacancies in the program will be filled as they become available.

### **WILDLIFE BIOLOGY**

**261 (I). PRINCIPLES OF WILDLIFE MANAGEMENT**  
Fundamental ecology and principles of wildlife management. Emphasis on population characteristics and responses. 2 class hours, 1 4-hour laboratory period.

**262 (II). TECHNIQUES OF WILDLIFE MANAGEMENT**  
Methods of collecting and interpreting data in

wildlife management. Emphasis on field and laboratory experience in census methods and criteria for determining sex, age and other characteristics of wild birds and mammals. Prerequisite, elementary statistics. 2 class hours, 1 4-hour laboratory period. For Wildlife majors only.

**264. MANAGEMENT OF UPLAND WILDLIFE**  
Life histories, identification, and habitat requirements of upland game birds, game mammals, and furbearers; management of upland habitats offered in alternate years. 2 class hours, 1 4-hour laboratory period.  
**Credit, 2-3.**

**363. MANAGEMENT OF WETLAND WILDLIFE**  
The origins, important characteristics and distribution of wetland wildlife habitat in North America and other portions of the northern hemisphere. Multiple values of wetlands, public management practices and principal wetland wildlife species. 2 class hours, 1 4-hour laboratory period. Laboratory section restricted to Wildlife majors. **Credit, 2-3.**

**385, 386. SPECIAL PROBLEMS**  
Individual study of a selected problem for qualified students. By arrangement with members of the department. **Credit, 1-6.**

**391 (I), 392 (II). WILDLIFE SEMINAR**  
Specialized study in a selected area of wildlife biology or management. For upper level students only. **Credit, 1-3.**

### **FISHERIES BIOLOGY**

**265 (I). TECHNIQUES OF FISHERIES BIOLOGY**  
Principles and techniques of fishery management, stressing population and growth dynamics, and field procedures. Prerequisite, **ZOOL 300**.

**267 (I). LABORATORY IN PRINCIPLES OF FISHERIES BIOLOGY**  
Field techniques in fisheries biology; operation and use of fishery research and management equipment. Laboratory analysis of field-collected data. Concurrent enrollment in **FISH 265**. 1 4-hour laboratory. **Credit, 1.**

**270 (II). ECOLOGY OF FISHES**  
Biological response of fishes to the environment. Aspects of growth, speciation, zoogeography, schooling, homing, and population and community dynamics will be considered. Prerequisites, **FISH 265** and **ZOOL 300** or permission of instructor.

**272 (II). INTRODUCTION TO MARINE FISHERIES**  
Factors affecting world marine fisheries resources and development. Review of



selected species of commercial importance and selected world fisheries. Prerequisites, FISH 265. 2 class hours, 1 4-hour laboratory.

#### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

#### 391 (I), 392 (II). FISHERIES SEMINAR

Specialized study in a selected area of fisheries biology. For upper level students only.

Credit, 1-3.

### Division of Home Economics

Helen R. Vaznaian, Director

Anne H. Ridenut, Assistant Director of Extension for Home Economics

Professors Merchant, Niederpruem, Wright; Associate Professors Davis, Green, Hawes, Lopez-Ansari, Miller, Murphy; Assistant Professors Moroney, Schumacher, Sullivan; Instructor Porter; Lecturers Pullen and Tuck.

The Division of Home Economics which is committed to improving the quality of individual and family life in a changing society provides several programs of study which prepare home economists for a variety of professional roles in education, business, and public service. The programs of study are as follows: HOME ECONOMICS EDUCATION, HOME ECONOMICS EXTENSION, HOME ECONOMICS IN SOCIAL WELFARE & REHABILITATION, HOME ECONOMICS IN COMMUNICATION, HOME ECONOMICS IN BUSINESS, FASHION MARKETING, and HOME ECONOMICS IN PUBLIC SERVICE.

#### 125. DESIGN FUNDAMENTALS

The language of two-dimensional design relationships, studied through a series of design problems. Provides a basic visual grammar; may serve as a foundation for further study.

#### 170. FASHION MARKETING

Importance of fashion and the allied areas that form the fashion industry. Interrelationship of designers, textile industry, foreign and domestic markets and the manufacturer.

#### 211. ECONOMIC PROBLEMS OF THE FAMILY

Personal finance at various income levels and during different stages of the life cycle.

#### 212. CONSUMER ECONOMICS

Application of macro- and micro-economic theories and concepts to an understanding of consumer demand within a market economy, income distribution, consumer spending and saving.

#### 215. THE CONSUMER AND ECONOMIC PROBLEMS

Contemporary economic problems as they

affect families. Affluence and poverty, fiscal policies, delivery of public goods.

#### 220. THEORY AND APPLICATION OF MANAGEMENT

Interrelationships in management and decision-making of family values, goals, and circumstances; use of human and material resources for maximum economy, satisfaction and family well-being.

#### 235. APPLIED DESIGN: TEXTILES

Experimental design projects in loom weaving and surface patterns using the techniques of silkscreen, tie-dye, Batik and block printing. Prerequisite, HOM EC 125, ART 120 or equivalent.

#### 240. TEXTILES FOR THE CONSUMER

Theories and processes underlying manufacture and development of textile products as a basis for the application of decision-making processes.

#### 241. TEXTILES FOR THE INTERIOR

Basic factors related to durability, maintenance, appearance, appropriateness, performance and cost of textiles used in residential, commercial and public interiors.

#### 255. MAN AND CLOTHING

The impact of clothing and textiles on the individual and society; sociological, psychological and economic implications as seen in historical and contemporary perspective. Prerequisite, PSYCH 101, SOCIOL 101 or ANTH 104.

#### 257. CONTEMPORARY FASHION ANALYSIS

Development of current fashion, current fashions in relation to the principles of design and color, and individual variables. Prerequisite, HOM EC 125.

#### 259. QUALITY ANALYSIS OF APPAREL

Analysis of quality standards in apparel; emphasis on aesthetic design and creative expression, functional characteristics and satisfactions of construction and materials, economic factors of cost and maintenance. Students receiving less than Level 1 on Clothing Pre-Test (administered at first class meetings) must sign up for special 1-credit individualized modular program.

#### 260. HOUSEHOLD EQUIPMENT

Physical principles, construction, materials, and economic considerations underlying selection, use and care of household equipment. 2 class hours, 1 2-hour laboratory period.

#### 265. HISTORY OF COSTUME

Western costume from ancient civilizations to the present; exploration of the relationship of clothing to the period. Prerequisite, HIST 100 or 110.

#### 272. PRINCIPLES AND CONCEPTS OF RETAILING

Principles and concepts requisite for successful retail distribution, history and current trends in retailing. Prerequisite, HOM EC 170 MKTG 201.

#### 274. CONSUMER ATTITUDES AND DEMAND

The motives, attitudes, and expectations of consumer behavior as influencing variables operating within and on the market. Prerequisites, ECON 100, PSYCH 101, SOCIOL 101, or permission of instructor.

276. PRODUCT ANALYSIS: NONTEXTILE  
Consumer products from design through the manufacture and distribution channels. Evaluation of products as they relate to consumer needs and ecology.

#### 310. LEGAL ASPECTS OF CONSUMER INTEREST

Consumer protection as afforded the consumer in the market by Federal, State and private agencies and recent court decisions. Protections which should be afforded the consumer, legal and otherwise.

#### 320. RESOURCE MANAGEMENT FOR EXCEPTIONAL FAMILIES

Special managerial problems faced by families with exceptional imbalances in resources. Analysis of techniques of compensating for resource limitations in families in poverty, with health handicaps, with young mothers in the labor force, one-parent families, student couples, and retired couples.

#### 342. TEXTILES FOR THE CONSUMER II

Current developments and research in the field of textiles affecting consumer satisfactions with product serviceability and legislative projections. Prerequisite, HOM EC 240 or 241.

#### 361. APPAREL DESIGN I, FLAT PATTERN

Theory of apparel design developed through flat pattern methods. Problems include fitting master pattern, creation and execution of original designs. Prerequisite, HOM EC 259, or Level 2 score on Clothing Pre-Test and special 1-credit problem on fitting and alterations.

#### 363. APPAREL DESIGN II, COMPARATIVE MATERIALS AND METHODS

Experimentation, execution and evaluation of methods and materials as they relate to design, performance and maintenance factors in advanced structuring and creation of apparel. Prerequisite, HOM EC 259, or Level 2 score on Clothing Pre-Test and special 1-credit problem on fitting and alterations.

#### 365. PERSPECTIVES IN THE CLOTHING PROFESSION

Literature, research, current issues and trends



with implications for the clothing professional in educational programs, social and governmental agencies, consumer and business organizations.

**371. COMMUNITY ORGANIZATIONS AND SERVICES**

An experience of short-term reciprocity between theory and practice emphasizing the principles, methods and problems of community planning to meet a diversity of human needs. Personnel and recipient attitudes, agency relationships, public and private agency roles and responsibilities and contemporary movement.

**374. RETAIL SALES PROMOTION**

Principles and concepts of sales promotion, including advertising types and techniques and methods of display. Prerequisite, HOM EC 272.

**381. ADULT EDUCATION IN HOME ECONOMICS**

Philosophy and principles of adult education, and the community and organizational factors affecting their development. Field trips include observation of adult education programs in community organizations and agencies.

**382. CURRICULUM AND METHODS IN HOME ECONOMICS**

Organization, scope and sequence of learning experiences in Home Economics Education. Philosophy and content of curriculum, development or resource units, and methods of teaching. Prerequisites, PSYCH 301, 263, and EDUC 251. 4 class hours. Credit, 4

**385, 386. SPECIAL PROBLEMS**

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

**388. FIELD EXPERIENCE** Credit, 1-15.

**389A. RETAILING FIELD EXPERIENCE**

Supervised work-study program including 3 months off-campus experience in cooperating stores; evaluation of student's training, experience and development. Prerequisites, MKTG 201 and 210, HOM EC 272 and 374. 6-8 weeks prior selling experience and permission of the department. Credit, 15.

**389. FIELD EXPERIENCE** Credit, 1-15.

**391-394. SEMINAR IN HOME ECONOMICS**

Reports and discussion of current research in Home Economics. 1-3 class hours. Credit, 1-3.

**398. SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

**399. SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

**Hotel, Restaurant and Travel Administration**

*Head of Department:* Associate Professor Stevenson W. Fletcher, Professor Eshbach, Adjunct Professor Tabler; Associate Professors Cournoyer, Manning, McCullough, Pizam, Wisley; Lecturer Witkoski.

All students are required to complete at least 800 hours of paid work experience in the hotel, restaurant, or travel field — or 400 hours of paid work experience and completion of HRTA 310 and HRTA 311. Students may elect a concentration of courses in one of these areas of study: Hotel Administration, Restaurant Administration, Travel and Tourism, or Institution Management. See the Departmental bulletin, *The Passkey*, for details.

**100 (I), (II). INTRODUCTORY**

An orientation to the hotel, restaurant and travel industry. Development of the industry; current trends and opportunities in the various sectors of the industry.

**120 (I), (II). TRAVEL AND TOURISM**

Travel: trends, travel-modes, economic impact on destination area. Tourism development and marketing. Prerequisite, HRTA 100 or permission of instructor.

**130 (I), (II). SCHOOL FOOD SERVICE MANAGEMENT**

School food service administrative policy, funding, recordkeeping, personnel management, food production logistics, relationships with power groups, legislation, and current trends. Scheduled field trips. Prerequisites, HRTA 156, ACCTG 120, MGT 214 or other management course.

**156 (I), (II). FOOD PRODUCTION MANAGEMENT I**

Basic principles of menu planning and the management of purchasing, food production, and service. 2 class hours, 13-hour laboratory.

**168 (I), (II). WINES AND SPIRITS IN FOOD SERVICE OPERATIONS**

The selection, pricing, merchandising, and service of wines and spirits in restaurants, clubs, and other food service operations. Factors in determining which wines should be offered in a particular food service operation. Recognition of better known wines, American and imported. 1 class hour. Credit, 1.

**200 (I), (II). MANAGERIAL ACCOUNTING FOR THE HOSPITALITY INDUSTRY**

Financial practices and systems used in hotels and restaurants. Controls, capital budgeting, operational budgeting, use and interpretation

of financial statements, and specialized hotel accounting procedures. Prerequisite, course in accounting. Non-majors require permission of instructor.

**202 (I), (II). PERSONNEL MANAGEMENT IN HOTELS, RESTAURANTS, AND THE TRAVEL INDUSTRY**

The management of people in food service, hotels, and the travel industry; leadership and motivation, organization, training and management development, job analysis, wage and salary administration, and work simplification.

**203, 204 (I). GUEST LECTURE SERIES**

Analysis of trends and practices by leaders of the hotel, restaurant and travel field. 1 class hour. Credit, 1-2.

**211 (I), (II). FOOD SERVICE MANAGEMENT**

Practices used by the food service industry pertaining to purchasing, receiving, and issuing food, beverages, and other supplies. Principles of food and beverage cost control.

**267. ADVANCED FOOD PRODUCTION MANAGEMENT**

Analysis of factors affecting food production in the food service industry, emphasizing maintenance of food quality and nutritive value. Evaluation of convenience foods, new food ingredients, and commercial equipment. Prerequisite, HRTA 156. Credit, 2.

**269. ADVANCED FOOD PRODUCTION MANAGEMENT LABORATORY**

Laboratory in food production practices including demonstration, application, and advanced concepts, new developments, equipment, usage, and teaching methods. Prerequisite or co-requisite HRTA 267. Credit, 1.

**300 (I), (II). HOTEL AND RESTAURANT MERCHANDISING**

Market environment in which the firm operates; communication principles and their application to sales goals; and effective utilization of techniques and tools of merchandising in hotel, restaurant, and similar enterprises. For seniors: others by permission of instructor.

**301 (II). HOTEL, RESTAURANT AND TRAVEL LAW**

Laws as applied to hotel, food service establishments, and the travel industry; a consideration of bailments, contracts, torts, regulations, insurance, and sanitation.

**310 (I), (II). HOTEL SYSTEMS AND OPERATIONS**

Analysis and evaluation of hotel systems and operations. Emphasis on analytical techniques, systems, computer-assisted operations, and change-induced problems. Oppor-

tunity to participate in operations of Campus Center. Prerequisites, HRTA 102, 200, 211. 2 class hours, laboratories by arrangement.

### 311 (I), (II). FOOD AND BEVERAGE SYSTEMS AND OPERATIONS

Analysis and evaluation of the food and beverage systems and operations. Emphasis on analytical techniques, systems, and operational decision-making within the food and beverage complex. Opportunity to participate in the food and beverage operations of the Campus Center. Prerequisites, HRTA 102, 200, 211. 2 class hours, laboratories by arrangement.

### 321. ADVANCED PERSONNEL MANAGEMENT IN HOTELS AND RESTAURANTS

Reports and discussions of current practices in personnel management in the Hospitality Industry.

### 350 (I), (II). QUANTITY FOOD MANAGEMENT

Management of food production in institutions, quality control, recipe standardization, portion and cost control, menu planning, and simplification. Prerequisite, HRTA 156. 2 class hours, 1 4-hour laboratory. Credit, 4.

### 351 (I). INSTITUTIONAL ADMINISTRATION

Principles of organization, management, sanitation, food service planning, and equipment selection. Three field trips. Prerequisite, HRTA 130 or 156. 2 class hours, 1 4-hour laboratory. Credit, 4.

372 (II). QUANTITY FOOD PURCHASING  
Food distribution and merchandising processes as they relate to the purchasing of food for food service. Prerequisites, ACCTG 110, ECON 104.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

### 392. SEMINAR IN TRAVEL AND TOURISM

Consideration of the interaction between the broad area of the travel industry and its relationship to hotels, restaurants, and similar firms, with special attention to management decisions made in this broader context. 2 class hours. Credit, 2-3.

### 393. SEMINAR ON LABOR RELATIONS PROBLEMS

Considerations of the labor relations problems peculiar to the hotel, restaurant, travel and institutional management area, with special attention to negotiation, grievances, and collective bargaining. 2 class hours. Credit, 2-3.

### 394. SEMINAR IN FOOD I

Reports and discussions of current research studies in food. Permission of instructor required. 1 to 3 class hours. Credit, 1-3.

### 395. SEMINAR IN INSTITUTION ADMINISTRATION II

Reports and discussions of current research studies in Institution Administration. Permission of instructor is required. 1 to 3 class hours. Credit, 1-3.

### 396. SEMINAR IN FOOD SERVICE SYSTEMS

Selected case studies in the food service industry to enable students to develop analytical and decision-making abilities in solving management and operational problems. 2 class hours. Credit, 2-3.

### 397. SEMINAR

Relationships between hospitality industry problems, trends and developments, and emerging problems and changes of society. 2 class hours. Credit, 2.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Landscape Architecture and Regional Planning

Head of Department: Professor Ross S. Whaley

Professors Bacon, Costley, Davis, King, Mosher, Procopio, Scheffey, Zube; Associate Professors Dines, Fabos, Greenbie, Hamilton, Kent, Martin; Assistant Professors Bumgardner, Cramer, Gluck, Olson, Platt, Sears; Lecturers Braun and Schwarz.

The department offers two undergraduate programs: Environmental Design and Park Administration. In addition, an Option in Design Studio is available under the Environmental Design program. For information on Park Administration see the description under that name.

### ENVIRONMENTAL DESIGN

The following courses are required in sequence: junior year: Fall semester, ENVDES 190, 243, and 305; Spring semester, ENVDES 244 and 274; senior year: Fall semester, ENVDES 347, ENGL 337; Spring semester, ENVDES 348 and 390A. In addition, the student is expected to select 7 electives through which he/she will build a strong base in the natural sciences and/or the social sciences.

The department provides a list of acceptable courses from which these selections can be made, with the help of an advisor.

### OPTION IN DESIGN STUDIO

During the Fall semester of the junior year the student is required to take ENVDES 190, 235, 243 and 315. Required courses during the Spring semester are: ENVDES 236, 244, 274 and 316. Enrollment in the senior year studio courses is limited, as noted earlier in this directory (see Environmental Design). The studio courses are ENVDES 327, 328 and 353, 356. In addition, ENVDES 347 and 348 are required.

### 140 (I). VISUAL AWARENESS OF THE PHYSICAL ENVIRONMENT (D)

A survey course to improve the ability to perceive, understand and discuss the physical/visual environment, its use and problems. The breadth of environmental complexity; different environments, their component parts, processes and problems. Emphasizes an expanded consciousness of environment: a developed, directed and focused concern. Outlines or delimits courses of citizen action. Non-majors only.

### 212 (II). PRINCIPLES OF GRAPHIC COMMUNICATION

The theories of projection as related to graphic communication. Primarily for non-majors. 1 class hour, 6 studio hours. Credit, 4.

### 235 (I), 236 (II). PLANT MATERIALS

Introduction to trees, shrubs and other plant material useful in landscape plantings. Prerequisite, BOTANY 100, 101 or 121. 1 class hour, 2 2-hour laboratory periods. Credit, 3 per semester.

### 243 (I). HISTORY AND THEORY

A broad survey of the history of the designed human environment, from the origins of human society into the Renaissance.

### 244 (II). HISTORY AND THEORY

A broad survey of the history of the designed human environment; the Renaissance to the present. May be elected independently. 2 class hours, 1 discussion period.

### 273 (I). CITY PLANNING HISTORY

The historical aspects of changing land uses, the evolution of community form and the development of urban areas.

### 274 (II). CITY PLANNING

Planning techniques and legal tools for guidance and control of contemporary urban and metropolitan development. Problems of land use, housing, transportation, and related urban elements. May be elected independently.



**305 (I). THE DYNAMICS OF HUMAN HABITATIONS**

The complex interactions between man and his physical environment. Uses information and viewpoints from psychology, sociology, biology, ecology, ethology, art, architecture and planning to locate and demonstrate fundamental organizing principles in the human perception and use of space, and its effect on interpersonal relations. 2 2-hour lecture/seminar periods.

**315 (I); 316 (II). GRAPHIC COMMUNICATIONS I & II**

Theories of projection as applied to graphic communications; current techniques in the graphic communication of the analyses and solutions of various environmental design problems and the development of facility in various media. ENVDES 212 or 315 is prerequisite for ENVDES 316. 1 class hour, 6 studio hours. Credit, 4 per semester.

**327 (I), 328 (II). BASIC APPLIED DESIGN**

The development of an approach embodying the application of theory and design principles to the solution of environmental design problems. Open only to students in the Design Studio Option. 9 studio hours. Credit, 4 per semester.

**347 (I). THEORY**

Natural factors which influence environmental planning and site development. The influences of climate, land form, soil, water and vegetation. 2 class hours, 1 discussion period.

**348 (II). THEORY**

Theories and techniques relevant to the analysis of design problems. Functional requirements. Human needs and responses to the design environment. 2 class hours, 1 discussion period.

**353 (I). LAND FORM**

The manipulation of land surfaces; graphic representation through topographical plans, cross sections, profiles and models. Open only to students in the Design Studio Option. 6 studio hours.

**356 (II). CONSTRUCTION MATERIALS**

The materials used in landscape construction, their design potential and limitations. Open only to students in the Design Studio Option. 6 studio hours.

**377 (I), 378 (II). URBAN PROBLEMS**

Nature of the planning function in government; and investigation of planning problems in housing, industrial location and development, decentralization of cities, urban transportation, urban design and regional planning. Prerequisite, ENVDES 274. Credit, 3 per semester.

**385 (I), 386 (II). SPECIAL PROBLEMS**

Supervised individual work on assigned projects for qualified seniors. With permission of advisor and contract with instructor. Credit, 1-6.

398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

**399. SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

**Related Courses**

224 (I), 226 (II). Architectural Design I & II

**PARK ADMINISTRATION**

The following courses should be taken during the freshman and sophomore years: BOTANY 100 or 121, PSYCH 101, SOCIOL 101 and STAT 231. These courses satisfy portions of the University Core Requirements.

Juniors are required to take the following courses during the Fall semester: ENVDES 190, ENGL 337 and PK ADM 241; and, during the Spring semester: ENVDES 235, 274, MGT 201. Seniors take during the Fall semester: ENVDES 347, PK ADM 367, and during the Spring semester: PK ADM 264 and 368. In addition, a one-credit seminar is required each semester of the junior and senior years.

**231 (I). PRINCIPLES OF ARBORICULTURE**

Maintenance of shade and ornamental trees. Development of municipal and private shade tree programs. 1 class hour, 2 2-hour laboratory periods.

**241 (I). HISTORY AND PHILOSOPHY OF PARKS**

The historical, social, economic, and political backgrounds, and present policies under which parks and other outdoor recreation resources have been and are being administered.

**263 (I). ADMINISTRATION OF PARKS AND OTHER OUTDOOR RECREATION RESOURCES**

The theory, policies, and procedures followed at the several governmental levels in the selection, development and administration of parks and other outdoor recreation resources.

**264 (II). PARK MAINTENANCE AND MANAGEMENT**

Survey of maintenance systems management. The role of maintenance programs, their organization and functions. Planning and organizing the maintenance program, development and application of maintenance standards, property and facility maintenance, job planning and scheduling, maintenance inspections, contract maintenance, computer applications to maintenance and records

keeping and scheduling. On-site observation of maintenance programs. Field trip required.

**283 (I), 284 (II). JUNIOR SEMINAR**

Classroom and field examination of new and proposed legislation, areas of current public concern and controversy, innovations in public practice, and opportunities in extended education and professional practice. Graded pass/fail. 1 2-hour discussion period. Credit, 1 per semester.

**367 (I). PARK FISCAL AND PERSONNEL MANAGEMENT**

Evaluation of the methods utilized in the preparation, presentation and justification of the financial and personnel requirements of municipal, county, state and national parks.

**368 (II). PARK, RECREATION AND OPEN SPACE PLANNING**

The purposes, techniques and processes of preparing and implementing park, recreation and open space master plans. Primarily for park administration majors; others admitted as space permits. 3 2-hour laboratory periods.

**385 (I), 386 (II). SPECIAL PROBLEMS**

Supervised individual work on assigned projects for qualified seniors. With permission of adviser and contract with instructor. Credit, 1-6.

**387 (I), 388 (II). SENIOR SEMINAR**

Classroom and field examination of new and proposed legislation, areas of current public concern and controversy, innovations in public practice, and opportunities in extended education and professional practice. Graded pass/fail. 1 2-hour discussion period. Credit, 1 per semester.

**398. SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

**399. SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

**Plant Pathology**

Head of Department. Professor Richard A. Rohde. Professors Gilgut, Holmes; Associate Professors Agrios, Mount; Assistant Professor Tattar.

**100 (II). PLANT DISEASES AND THEIR CONTROL**

Occurrence, importance, identification and control of diseases of plants used for food, clothing, shelter and beauty. Infectious and environmental factors that cause diseases of plants in the home and garden.



**251 (I). GENERAL PLANT PATHOLOGY**

The causes, nature and control of plant diseases. Diagnosis of plant diseases. Mechanisms, biochemistry and genetics of plant disease induction, development and control. Prerequisite, a course in botany. 2 class hours, 1 3-hour laboratory period.

**269 (II). FOREST AND SHADE TREE PATHOLOGY**

The causes, nature and control of tree diseases. Physiology and genetics of host-parasite-environment interaction in trees. Forest and shade tree disease management and principles of decay prevention in forest products. 2 class hours, 1 3-hour laboratory period.

**340 (I). GENETICS OF PLANT-PATHOGEN INTERACTION**

Genetic factors which control plant disease reaction and virulence. Includes genetic stability of pathogens, mutations and parasexuality in pathogenic variation, and gene for gene hypothesis in relation to disease development. Prerequisite, PLPATH 251 or permission of instructor.

**361 (I). PLANT VIROLOGY**

Plant virus structure, infection, synthesis, assay and purification. Symptomatology and physiology of virus infected plants. Transmission, identification and control of plant viruses. Virus diseases of major plant groups. Prerequisite, PLPATH 251 or permission of instructor. Three class hours, 1 3-hour laboratory period. Credit, 4.

**378 (I). NEMATOLOGY**

Anatomy, morphology, and classification of plant-parasitic and other soil-inhabiting nematodes, parasitic relationships with plants and principles of control. Prerequisite, a year of biological science. 3 class hours, 1 3-hour laboratory period. Credit, 4.

**385, 386. SPECIAL PROBLEMS**

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

**398. SENIOR HONORS**

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

**399. SENIOR HONORS**

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

**Plant and Soil Sciences**

Head of Department: Professor F.W. Southwick. Professors Boicourt, Drake, Gunner, Havis, Lachman, Lord, Maynard, Thomson, Troll, Vengris, Weeks, Zak; Associate Professors Baker, Barker, Bramlage, Craker, God-

dard, Greene, Jennings, Marsh, Rosenau, Stewart; Assistant Professors Anderson, Carrow, Emino, Kirkham, Victor.

**100 (II). BASIC PLANT SCIENCE (E)**

An introduction to the study of crop plants: the soil, mineral nutrition, physiological principles and environmental factors related to the growth and development of economic crops. 2 class hours, 1 2-hour laboratory period.

**105 (II). SOILS**

Fundamentals of soil science covering development, properties and management of soils and the interrelationship of soils to plant growth. 2 class hours, 1 2-hour laboratory period.

**110 (I). PLANT PROPAGATION**

The science of plant reproduction. 2 class hours, 1 2-hour laboratory period.

**115 (I). THE PLANT ENVIRONMENT AND CROP PRODUCTION (E)**

Important environmental factors affecting plant growth and development, the interrelationships which exist between these factors and plants, and the effects resulting from environmental modification attributable to human activities.

**120 (II). ORGANIC FARMING AND GARDENING (E)**

Basic principles of plant nutrition and culture, soil fertility and management by organic methods, biological and natural control of insect pests, weeds and plant diseases, variety selection, and alternative chemical methods. 2 class hours, 1 2-hour laboratory and discussion period.

**125 (II). FLORICULTURE**

An introduction to plants for the esthetic enrichment of the home environment. Propagation, use, culture, and identification of plants are stressed. For non-majors. 2 class hours, 1 2-hour laboratory period.

**200 (I). DECIDUOUS ORCHARD SCIENCE**  
The physiological and nutritional principles upon which deciduous tree fruit production is based. Responses of the plants to environmental influences and cultural practices. 2 class hours, 1 2-hour laboratory period.

**205 (I). SMALL FRUIT TECHNOLOGY**  
Basic principles underlying the production of small fruits. 2 class hours, 1 2-hour laboratory period.

**210 (II). RETAIL FLORAL DESIGN**  
Basic principles of design as applied to commercial floral arrangements. Non-majors excluded without special permission. 2 3-hour laboratory periods.

**215 (I). GREENHOUSE CROP MANAGEMENT**

Fundamentals of the artificial environment of greenhouses as they influence the vegetative and reproductive growth of plants. 2 class hours, 1 2-hour laboratory period.

**225 (I). PRINCIPLES OF VEGETABLE CROPS**

Principles and practices of commercial vegetable crop production. 2 class hours, 1 2-hour laboratory period.

**250 (II). FORAGE & FIELD CROPS**

Morphological characteristics, physiological responses, cultural requirements, harvest management, and storage requirements of forage and field crops. 2 class hours, 1 2-hour laboratory period.

**255 (I). AGROSTOLOGY**

The establishment and maintenance of turf grasses used on lawns, athletic fields, highways, airports, cemeteries and turf nurseries. 2 class hours, 1 2-hour laboratory period.

**315 (I). MICROBIOLOGY OF THE SOIL**

Soil microorganisms; their distribution, ecology and transformation of organic and inorganic substrates. Microbiology of the rhizosphere and the biological equilibrium. Prerequisite, MICBIO 250 or permission of instructor. 2 class hours, 1 3-hour laboratory period.

**330 (I). PLANT NUTRITION**

The accumulation and transport of inorganic ions in plants and their function in plant metabolism. 2 class hours, 1 2-hour laboratory period.

**335 (I). TAXONOMY OF ECONOMIC PLANTS**

Plant families, genera, species and cultivars of importance in the horticultural and agronomic fields. 2 class hours, 1 2-hour laboratory period.

**340 (II). PLANT BREEDING**

Improvement of horticultural crops using established genetic principles and methods. Prerequisite, ZOOL 240 or equivalent. 2 class hours, 1 2-hour laboratory period.

**345 (II). POST-HARVEST PHYSIOLOGY**

The physical and chemical processes of plants before and after harvest and the influence of environmental, chemical, and storage factors on these processes. 2 2-hour classes.

**360 (I). ECOLOGY AND CONTROL OF WEEDS**

Identification and ecology of common weeds and principles of weed control with emphasis on the use of chemical herbicides. 2 class hours, 1 2-hour laboratory period.

**365 (I). SOIL FORMATION AND CLASSIFICATION**  
 The development and classification of soils as related to physical, chemical, biological, climatic and geological factors. 3 class hours, 1 2-hour laboratory period. *Credit, 4.*

**370 (II). SOIL PHYSICS**  
 Physical properties of soils including water retention and movement, soil temperature, microclimatology, texture and structure; their measurements, evaluation and influence in environmental systems. Prerequisite, PLSOIL 105, PHYSIC 121-122, or permission of instructor. 2 class hours, 1-3 hour laboratory period.

**375 (I). SOIL CHEMISTRY**  
 Soil chemical properties as related to chemical reactions of plant nutrients in soils. Prerequisites, CHEM 112 and PLSOIL 105 or equivalent. 2 class hours, 1-2 hour laboratory period.

**380 (II). SOIL FERTILITY**  
 Mineral nutrition in the growth of plants; the use and interactions of fertilizers and other soil amendments; soil reaction; mineral deficiencies and toxicities in plants. 2 class hours, 1-2 hour laboratory period.

**385, 386. SPECIAL PROBLEMS**  
 Individual study of a selected problem for qualified students. By arrangement with members of the department. *Credit, 1-6.*

**391 (I), (II). SEMINAR**  
 Career planning for Plant & Soil Science majors, and the presentation of pertinent topics related to students' major interests.

**398. SENIOR HONORS**  
 Senior research, thesis option. By arrangement with Department and/or Honors Office. *Credit, 4.*

**399. SENIOR HONORS**  
 Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. *Credit, 1-5.*

**Veterinary and Animal Sciences**

*Head of Department:* Professor T. W. Fox.  
*Professors:* Anderson, D. Black, W. Black, Damon, Grover, Smith, Smyth; *Associate Professors:* Borton, Howe, Lyford; *Assistant Professors:* Duby, Marcum.

The Department of Veterinary and Animal Sciences offers a program of study in the animal sciences. The curriculum provides for an important degree of flexibility depending upon the student's interest and ability.

In addition to the University core the requirements for majors are:

*Basic Science Core*  
 Botany 100 or Zool 101

*Chemistry-* 1 course  
*Biochemistry-* 1 course  
*Microbiology-* 1 course  
*Mathematics/Statistics-* 2 courses

*Animal Sciences Core*  
*Genetics-* 2 courses  
*Nutrition-* 2 courses, including ANSCI 330  
*Physiology-* 2 courses, including ANSCI 220  
*Management-* 1 course  
*Pathology-* 1 course

*Animal Science/Animal Industry Option*  
 An additional 4 courses in three "areas" are required to prepare students in their selected option.

Pre-veterinary students in the College of Food and Natural Resources major in animal science as freshmen. Students completing two semesters of academic work with a satisfactory cumulative average (2.5) may apply to the pre-medical advisory committee in their third semester for entrance into the pre-veterinary curriculum. Such students are counseled in the Department of Veterinary and Animal Sciences.

**121 (I), (II). INTRODUCTORY ANIMAL SCIENCE**  
 Modern animal and poultry science and the many scientific disciplines it encompasses. The poultry, dairy, meat, recreational and laboratory animal industries in terms of national and world economics and their role in serving mankind. 2 class hours, 1 2-hour laboratory.

| EQUITATION SKILLS                        | Credit |
|------------------------------------------|--------|
| 150 (I), (II) Riding, Beginner I         | 1      |
| 151 (I), (II) Riding, Beginner II        | 1      |
| 152 (I), (II) Riding, Intermediate I     | 1      |
| 153 (I), (II) Riding, Intermediate II    | 1      |
| 154 (I), (II) Riding, Advanced           | 1      |
| 155 (I), (II) Special Problems in Riding | 1      |
| 156 (I) Special Problems in Training     |        |
| 157 (II) Special Problems in Teaching    |        |

**220 (II). SYSTEMATIC ANIMAL PHYSIOLOGY**  
 Comparative study of the organ physiology of mammals and birds. Emphasis on those aspects most pertinent to animal science. 3 class hours, 1 3-hour laboratory. *Credit, 4.*

**221 (I). PHYSIOLOGY OF HOMEOSTASIS**  
 Homeostatic circuits available to the living body; such as fluid, gaseous, neural, muscular and specialized integrated mechanisms. 2 class hours, 1 2-hour laboratory.

**255 (II). FOOD FROM ANIMALS**  
 Animals as a food source. Topics include methods of estimating yield and quality; effects of genetics, nutrition, physiology and management on product quality, yield, and

efficiency of production. 2 class hours, 1 2-hour lecture-demonstration period.

**256 (II). LIVESTOCK MANAGEMENT**  
 Beef, sheep and swine production in New England and the United States. Field trips cost \$5-\$10. 3 class hours, 1 2-hour laboratory. *Credit, 4.*

**307 (I), (II). PRINCIPLES OF ANIMAL GENETICS**  
 The identification, transmission, expression and arrangement of the hereditary material. Emphasis on genetic principles affecting qualitatively inherited traits of animals. Prerequisite, permission of instructor. 2 class hours, 1 2-hour lecture-demonstration period.

**308 (I), (II). APPLIED ANIMAL GENETICS**  
 The mechanisms of heredity and variation in livestock and poultry; the role of selection and breeding systems in genetic improvement and their evaluation. Prerequisite, ANSCI 307.

**321 (I). PHYSIOLOGY OF REPRODUCTION**  
 Comparative aspects of anatomy, embryology, endocrinology and physiology of reproduction and lactation. Three class hours.

**322 (I). REPRODUCTION LABORATORY**  
 A laboratory course in techniques used to regulate reproductive performance of the farm species. *Credit, 1.*

**323 (II). PHYSIOLOGY OF REPRODUCTION LABORATORY**  
 Laboratory exercises illustrating basic mechanisms involved in reproductive processes. Individual student participation stressed. *Credit, 1.*

**330 (I). PRINCIPLES OF ANIMAL NUTRITION**  
 Scientific principles of nutrition in both ruminants and nonruminants.

**334 (II). APPLIED ANIMAL NUTRITION**  
 Application of scientific principles of nutrition to practical feed formulation and feeding systems for poultry and livestock. Prerequisite, ANSCI 330. 1 class hour, 2 2-hour laboratory periods.

**353 (I). POULTRY MANAGEMENT**  
 Principles of poultry business management. A comprehensive view of all phases of the poultry industry. Field trips cost \$10-\$15. 2 class hours, 1 2-hour laboratory.

**354 (II). DAIRY HERD MANAGEMENT**  
 Dairy cattle and milk production in New England and the United States. Managerial problems concerned with successful dairying. Field trips cost \$10-\$15. 2 class hours, 2 2-hour laboratory periods. *Credit, 4.*



## School of Health Sciences

### 358 (I). HORSE MANAGEMENT

An introduction to the breeds, feeding, training, care and management of the horse. Lab fee \$5-\$10 covers field trips. Open to all. 1 class hour, 1 2-hour laboratory. Credit, 2.

### 359 (II). ADVANCED HORSE MANAGEMENT

An advanced course in the nutrition, physiology, genetics, reproduction and health of the horse. Limited to Animal Science majors or by permission. Lab fee \$5-\$10. Two class hours, 1 2-hour laboratory. Credit, 4.

### 361 (I). INTERMEDIATE BIOMETRY

Design of experiments conducted in the biological sciences; methods of analysis of such designs, expectations of mean squares, selection of appropriate error terms, individual and multiple comparison, and trend analyses. Prerequisite, introductory course in biometrics or statistics, such as STAT 121.

### 362 (II). ADVANCED BIOMETRY

Analysis of data with disproportionate subclass numbers includes the method of fitting constants, the method of weighted squares of means, absorption of equations, expectations of mean squares, and tests of hypotheses. Prerequisite, ANSCI 361.

### 370 (II). ANIMAL PATHOLOGY

An introduction to the study of animal diseases. The causes, development, transmission and control, with application to diseases of animals which are of economic and/or public health importance. Prerequisites, MICBIO 140 or ZOOL 135 or ANSCI 220.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

### 391 (I). JUNIOR SEMINAR

Review of current literature in Animal Science. Credit, 1.

### 392 (II). SENIOR SEMINAR

Review of current literature in Animal Science. Credit, 1.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and Honors Office. Credit, 4.

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and Honors Office. Credit, 1-5.

William A. Darity, *Dean*

## Communication Disorders

Chairman of Department: E. Harris Nober. Professors Melrose, Tolhurst; Associate Professors Boothroyd, Gengel, Nerbonne; Assistant Professors Duffy, Peirce, C. Seymour, H. Seymour.

The undergraduate Communication Disorders curriculum has a pre-professional orientation. Freshman and sophomore years are devoted primarily to the completion of the general University requirements. Junior and senior students receive training in the normal communicative processes, the disorders of speech and hearing, and the management of various problems. The program provides background for the student to attend advanced graduate training toward academic and clinical competence.

A minimum of 30 major credits is required of all students for the Bachelor's degree.

### 181. PHONETICS

The physiological and acoustic processes involved in producing sounds and the use of the International Phonetic Alphabet in describing these processes.

### 182. INTRODUCTION TO COMMUNICATION DISORDERS

The types and causes of communication disorders with emphasis on speech disorders.

### 281. CLINICAL PROCEDURES

Introduction to the clinical process as employed in a Communication Disorders Clinic including personnel responsibilities, professional ethics, techniques of differential diagnosis, clinic forms and referral procedures. Familiarization with clinical equipment and A/V presentations of selected diagnostic and therapy sessions. 2 class hours, 1 - hour laboratory period. Prerequisites: COMDIS 181, 182.

### 283. ARTICULATION DISORDERS

Basic principles and methods involved in the rehabilitation of articulation disorders. Emphasis on types of disorders, diagnosis, and evaluation of disorders, and therapeutic procedures. Laboratory observation. Prerequisites, COMDIS 181, 182 and 284. 3 class hours, 1 1-hour laboratory.

### 284. ANATOMY AND PHYSIOLOGY OF THE SPEECH AND HEARING MECHANISM

The anatomy and physiology of the speech and hearing mechanism; consideration of respiration, phonation, resonance, articulation, and audition.

### 285. BASIC CLINICAL AUDIOLOGY

The acoustics and physiology of hearing. The etiology and symptomatology of hearing loss. Selected diagnostic procedures. Supervised practice in audiometric testing. Prerequisites, COMDIS 182, 287.

### 286. REHABILITATION OF THE ACOUSTICALLY HANDICAPPED

Techniques of speech therapy, auditory-training, and speech reading for hard of hearing children and adults; multi-sensory approach to language development. Laboratory practice under supervision. Prerequisite, COMDIS 285. 2 class hours, 1 3-hour laboratory period.

### 287. FUNDAMENTALS OF HEARING AND SPEECH SCIENCE

Investigation of physiological, acoustic and psychological correlates of speech production, transmission and reception. Exercises in the application of laboratory methods. Prerequisites, COMDIS 181 and 284, and PHYSIC 114. 2 class hours, 1 2-hour laboratory.

### 288. CLINICAL PRACTICE

Supervised experience in therapy with individuals having articulatory type disorders. May be repeated once. Prerequisite, COMDIS 281. Limited to seniors.

Credit, 1-3 per semester.

### 289. COMMUNICATION PROBLEMS OF THE DEAF AND HARD OF HEARING

Physical, psychological, social, and education problems and needs of the hearing handicapped. Prerequisite, COMDIS 285.

### 291. PEDIATRIC AUDIOLOGY

Assessment and clinical management of infants and children with auditory disorders. Problems of differential diagnosis, screening techniques, conditioning procedures, and electrophysiologic methods. Parental guidance and employment of amplification with children. Prerequisite, COMDIS 285.

### 292. LEARNING AND LANGUAGE DISABILITIES IN CHILDREN

Learning disabilities associated with physical, psychological and social etiologies. Problems of language development and cognitive disorders, remedial practices in reading and writing problems, and learning patterns of the culturally disadvantaged. Diagnostic assessment and educational processes are outlined.

### 295. STUTTERING

Major theories of the etiology, diagnosis, and clinical management of stuttering. Limited to seniors.

### 392. SEMINAR IN COMMUNICATION DISORDERS

Special problems; include a choice of a) communication disorders and the teacher, b) communication disorders in geriatrics, c) communication disorders and medicine, d) the non-verbal child, e) electrophysiologic audiometry, f) speech audiometry, and g) communication disorders and mental retardation. Prerequisite, permission of instructor. May be repeated.



385,386. SPECIAL PROBLEMS  
Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

398. SENIOR HONORS  
Senior research, (thesis option). By arrangement with Department and/or Honors Office. Credit, 4.

399. SENIOR HONORS  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

### Division of Nursing

Director: Professor Ira Trail. Professors Earles, Gallagher, Good, Marram, Winder; Associate Professors Ancrum, Clark, Condrón, Friedman, Haase, Lindsay, Petrunenko, Sharp, Smith, Walker; Assistant Professors Flynn, Grancio, Hall, Hine, Johnson, LaMonica, McNally, Sahin, Sheridan, Whitbeck; Instructors Cole, Dreher, Karshmer, Rueckel; Lecturer Tripp.

### UNDERGRADUATE PROGRAM IN NURSING

The Division of Nursing offers an undergraduate program which leads to the degree of Bachelor of Science in Nursing (B. S. N.). This program is approved by the Board of Registration in Nursing, Commonwealth of Massachusetts, and is accredited by the National League for Nursing. Enrollment is limited to 200 students per class. There will be no admissions to this program for the 1977-78 academic year.

There are two components of the program: 1) lower division core and university core requirements; and 2) the upper division nursing science major. Pre-nursing courses may be completed at the University of Massachusetts or in other colleges/universities.

Nursing science courses (Junior and Senior Year) emphasize the role and functions of the professional nurse in assisting individuals and families to identify and/or to cope with their physical, psychosocial, and environmental problems; in promoting and maintaining individual and family health; in providing primary and secondary health care to individuals and families augmented by the use of extended nursing functions and in providing continuity of care for patients and families.

Clinical learning experiences are community based in four Satellite Learning Centers. These Centers are located in the following geographic areas:

- Amherst-Northampton
- Franklin County
- Springfield-North
- Model Cities-Springfield

### REQUIREMENTS FOR ADMISSION AND APPLICATION PROCEDURE

The requirements for admission to the upper division are: 1) successful completion of 60 semester hours of pre-professional prepara-

tion; 2) a minimum cumulative grade point average of 2.5; 3) achievement of a grade of at least "C" in each pre-requisite course; and 4) a minimum grade point average of 2.5 for all pre-requisite courses.

Students with a variety of academic and nursing backgrounds may apply for admission. Students may have earned credits in other colleges/universities in the Arts and Sciences or they may satisfy these requirements by satisfactorily completing CLEP (College Level Entrance Proficiency) Examinations in certain Arts and Science subjects, such as Chemistry, Microbiology, etc. (The University requires forty-five (45) semester hour credits to be taken in residence).

The National League for Nursing Comprehensive Examinations will be used for guidance and placement in the program. Students in the major will be expected to take all senior level nursing science courses.

All students seeking admission and information concerning examination details and requirements should contact the Admissions Office or the Division of Nursing, who are available for individual counselling. All nursing students will be assigned a faculty advisor in the Division of Nursing.

The Division of Nursing is committed to Affirmative Action guidelines of the University of Massachusetts. Students lacking the required cumulative grade point average may apply for tutorial assistance.

### GENERAL ACADEMIC AND PRE-PROFESSIONAL REQUIREMENTS FOR THE BACCALAUREATE PROGRAM IN NURSING

#### 1. General Academic Requirements:

Courses which satisfy University Core Requirements are:

- Rhetoric — 2 courses
- Social and Behavioral Sciences — 3 Courses
- Natural Sciences — 3 courses
- Humanities — 3 courses

In counselling sessions with an academic advisor, guidance will be offered in course selection.

#### 2. Pre-professional Prerequisites:

Prerequisites to the nursing major are as follows:

- Human Anatomy and Physiology 2 courses 6-8 credits
- Chemistry\* 1-2 courses 4-6 credits
- Zoology\* 1 course 3 credits
- Human Growth and Development over the Life Cycle 1-2 courses 3-6 credits
- Logic 1 course 3 credits
- Statistics (Applied) 1 course 3 credits

\*= prerequisites to Human Anatomy and Physiology.

### FRESHMAN YEAR

| 1st Semester                       | Credits |
|------------------------------------|---------|
| CHEM 111, General (E)              | 4       |
| Humanities (C)                     | 3       |
| Rhetoric (B)                       | 3       |
| *ANTH 104, Intro. To Cult. Anth.   | 3       |
| *PHYSIC 190                        | 3       |
|                                    | 16      |
| 2nd Semester                       |         |
| CHEM 160, Organic (E)              | 3       |
| CHEM 162, Organic Lab              | 1       |
| Rhetoric (B)                       | 3       |
| *MICBIO 140, Bio. of Microorganism | 3       |
| NURSE 100, Perspectives in Nursing | 2       |
| Elective                           | 3       |
|                                    | 15      |

### SOPHOMORE YEAR

| 1st Semester                   | Credits |
|--------------------------------|---------|
| *ZOOL 137, Anatomy             | 4       |
| *SOCIO 258 or PSYCH 280A       | 3       |
| *BIOCHM 220, Elementary (E)    | 4       |
| *PHIL 125, Logic               | 3       |
|                                | 14      |
| 2nd Semester                   |         |
| *ZOOL 138, Anatomy             | 4       |
| Humanities (C)                 | 3       |
| NURSE 120, Principles & Skills | 6       |
| Elective                       | 3       |
|                                | 16      |

### JUNIOR YEAR

| 1st Semester                                 | Credits |
|----------------------------------------------|---------|
| NURSE 210, Community Health Focus            | 3       |
| NURSE 220, Family Health Focus               | 4       |
| NURSE 200 (A), Pathophysiology               | 3       |
| NURSE 240, Human Develop. Through Life Cycle | 3       |
| *PSYCH 325B, Abnormal                        | 3       |
|                                              | 16      |
| 2nd semester                                 |         |
| NURSE 230, Nurs. Prevent. & Treat.           | 3       |
| NURSE 231, Nursing Practicum I               | 4       |
| NURSE 200 (B), Pathophysiology               | 3       |
| Elective                                     | 3       |
|                                              | 13      |

### SENIOR YEAR

| 1st Semester                     | Credits |
|----------------------------------|---------|
| NURSE 320, Nurse in Rehab.       | 3       |
| NURSE 321, Nursing Practicum II  | 4       |
| NURSE 310, Currents              | 3       |
| *PUBHIL 340, Statistics          | 3       |
| Elective                         | 3       |
|                                  | 16      |
| 2nd Semester                     |         |
| NURSE 350, Comprehensive Nursing | 6       |
| NURSE 340, Leadership in Nursing | 3       |
| NURSE 330, Intro. Research       | 3       |
| Elective                         | 3       |
|                                  | 15      |

\*Nursing Core Requirements

#### 100. PERSPECTIVES IN NURSING

An overview of health and health care services, relating historical events and social movements to developments in nursing and the health professions. Emerging roles of the professional nurse in health care are explored. Interrelationships of nurses and other members of the health team are considered. Permission of instructor required for non-majors. 2 1-hour lectures. Credit, 2.

#### 120. PRINCIPLES AND SKILLS BASIC TO PROFESSIONAL NURSING AND THE HEALTH CARE OF PEOPLE

A self-paced course. Acquisition of skills basic to the provision of nursing care, based on an understanding of scientific principles, in a multi-media laboratory setting with faculty supervision. All lower division prerequisites to the nursing major must be fulfilled previously or concurrently. 6-hour laboratory. Credit, 6.

#### 200. PATHOPHYSIOLOGY

Concepts of pathophysiology based upon student's prior knowledge of physiology. Emphasis on formation of concepts of pathology rather than upon the particulars of system dysfunction or individual disease entities. Ways in which various pathological processes affect the human organism at cellular, tissue, organ, organ system and whole body levels. Prerequisite: Upper division standing; permission of instructor for non-majors

#### 210. COMMUNITY HEALTH FOCUS ON NURSING

The health status of a community viewed through systematic collection and analysis of data; a report of the findings. Theories of health, community, systems, communication, the nurse's role in health care. Prerequisite: Upper division standing; permission of instructor for non-majors. 2 1-hour lectures, 1 3-hour practicum.

#### 220. FAMILY HEALTH FOCUS OF NURSING

A practicum. The role of the nurse in caring for individuals and families in health maintenance and promotion. Clinical experiences in a variety of community health and related facilities. Students use a problem-solving approach in providing nursing care for people of a variety of ages experiencing developmental crises and minor health problems. Prerequisites: Upper division standing and NURSE 210 (prerequisite or concurrent). 2 1-hour lectures, 6 hours clinical laboratory. Credit, 4.

#### 230. NURSING IN THE PREVENTION AND TREATMENT OF ILLNESS

Lecture/discussion. The nurse's role in diagnosing and meeting needs for nursing care in illness and its prevention. Concepts and theories related to the nurse's relationship with other health care members. Students analyze

an individual agency's contribution to prevention and treatment of illness and the agency's effects on individuals and families using it. Prerequisite: NURSE 210 and 220; prerequisite or concurrent: NURSE 200, PSYCH 325. 3 1-hour lectures.

#### 231. NURSING PRACTICUM I

Students begin to assume the role of the nurse in caring for individuals and families when prevention and treatment of illness is the goal of health care. Clinical learning experiences in a variety of community settings. Students use a problem-solving approach in providing nursing care for people in the prevention and treatment of the major health problems across the life span. Prerequisites or concurrent: NURSE 230, 200, PSYCH 325. 12 hours clinical laboratory. Credit, 4.

#### 240. HUMAN DEVELOPMENT THROUGHOUT THE LIFE CYCLE

A firm foundation in human development throughout the life cycle. Emphasis on biological, psychological and sociological aspects. Three 1-hour lectures.

#### 250. NURSING PROCESS

An orientation to the Nursing Process in clinical decision-making for the Registered Nurse. The Nursing Process as a foundation for professional practice, in terms of its historical origins, present implications and future potential. Prerequisites: Upper division standing, Registered Nurses. 2 1-hour lectures, 12 hours clinical laboratory. Credit, 6.

#### 310. CURRENTS IN NURSING

Selected historical and contemporary currents in nursing and outside of nursing. Attempts to project future currents and implications. Prerequisite: Senior year standing. 3 1-hour lectures.

#### 320. NURSING IN REHABILITATION

The role of the nurse in diagnosing and meeting needs for nursing care in assisting individuals and families toward rehabilitation. Community resources and services related to rehabilitation in the major health problems. The role of the nurse in assisting individuals and families to gain access to needed health and health-related services. Concepts and theories related to collaboration with other health care workers. Prerequisite: NURSE 230. 3 1-hour lectures.

#### 321. NURSING PRACTICUM II

Students assume the role of the nurse in caring for individuals and families when rehabilitation is the goal of health care. Clinical learning experiences in a variety of community settings. Students use a problem-solving approach in assisting people to cope with stresses brought about by long-term disability and the significant alterations in life style that accompany it. Prerequisite or concurrent: NURSE 231, 320. 12 hours clinical laboratory. Credit, 4.

#### 330. INTRODUCTION TO RESEARCH IN NURSING

The essentials of research in nursing. A model for identifying research problems in nursing, the interrelationship between theory and method, methodology unique to research in nursing, and appropriate statistical models. Students expected to analyze research articles and to understand the implications of the results for the clinical setting. Prerequisites: Upper division standing; PUB HL 340. 3 1-hour lectures.

#### 340. LEADERSHIP IN NURSING

An analysis and integration of organizational behavior in health settings, leadership styles in nursing roles, and management models in the delivery of nursing care. Prerequisites: Senior standing. 3 1-hour lectures.

#### 350. COMPREHENSIVE NURSING

The concept of comprehensive nursing care; participation in the delivery of such care to groups of people in a variety of community settings. Students evaluate their leadership role in the practice and management of comprehensive nursing care, recognize professional accountability, and draw upon the new knowledge from the field of research. A synthesis of previous learning about nursing and development of a theoretical and philosophical basis for beginning nursing practice. Prerequisite: NURSE 321, may be taken concurrently. 2 1-hour lectures, 12 hours clinical laboratory. Credit, 6.

#### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

#### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

#### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.



## Division of Public Health

Director: Professor William A. Darity. Professors Gage, Litsky, Peterson; Associate Professors Butts, Gross, Moustafa, Ortiz, Peters, Reynolds, Stuart, Tuthill, Wisnieski; Assistant Professors Chen, DiNardi, Goggin, Hosmer, Moore, Stamps; Instructor Crowley; Lecturers Reed, Stryker, Zapka.

Instruction in the Division of Public Health provides a comprehensive view of public health and prepares interested students for the many professional opportunities open in this area. Each student is expected to gain a broad background in the natural, biological and social sciences upon which health professional preparations are based.

The Division offers four optional areas at the undergraduate level. These are community health, environmental health, health laboratory science and medical technology. In each option students are prepared for further study at the graduate level.

### COMMUNITY HEALTH

#### FRESHMAN YEAR

| 1st Semester     | Credits |
|------------------|---------|
| *RHET 100 or 110 | 3       |
| **MATH 127       | 3       |
| +CHEM 111        | 3       |
| ZOOL 101         | 3       |
| PSYCH 101 or     |         |
| * SOCIOL 101     | 3       |
| 2nd Semester     |         |
| *RHET 100 or 110 | 3       |
| **MATH 128       | 3       |
| +CHEM 112        | 3       |
| SOCIOL 101 or    |         |
| *PSYCH 101       | 3       |
| ***Elective      | 3       |

\*May be taken either semester.

\*\*On basis of placement tests and interest in advanced science.

\*\*\*Elective chosen from Humanities.

If a language is elected, intermediate proficiency is required.

+With Divisional approval CHEM 101 and 102 may be substituted.

#### SOPHOMORE YEAR

| 1st Semester                        | Credits |
|-------------------------------------|---------|
| *PHYSIC 141                         | 4       |
| **4 Electives                       |         |
| 2nd Semester                        |         |
| ZOOL 230, Systems of the Human Body | 4       |
| *PHYSIC 142                         | 4       |
| MICBIO 140                          | 3       |
| **Electives                         | 3       |

#### JUNIOR YEAR

| 1st Semester                                         | Credits |
|------------------------------------------------------|---------|
| PUB HL 320, Introduction to Health Administration    | 4       |
| PUB HL 301, Principles of Community Health Education | 4       |
| ***STAT 121                                          | 3       |
| Sociology Elective                                   | 3       |

| 2nd Semester                                   |   |
|------------------------------------------------|---|
| PUB HL 304, School Health Education Elective   | 3 |
| PUB HL 330, Principles of Epidemiology         | 3 |
| PUB HL 360, Principles of Environmental Health | 3 |
| 2 Electives                                    | 6 |

#### SENIOR YEAR

| 1st Semester                                                         | Credits |
|----------------------------------------------------------------------|---------|
| +PUB HL 382, Field Training Studies                                  | 3-10    |
| PUB HL 385, Special Problems and/or                                  | 3       |
| **Electives                                                          | 3-7     |
| 2nd Semester                                                         |         |
| ++PUB HL 302, Community Development and Health Education or Elective | 3       |
| PUB HL 386, Special Problems                                         | 3       |
| ***3 Electives                                                       |         |

\*Students with Divisional approval may take PHYSIC 121 and PHYSIC 122.

\*\*Elective chosen from Humanities, or Social and Behavioral Sciences or PUB HL 301 or C E 374 or RHET 140, 145, 160, 165, or 170. (3 credits)

\*\*\*Students who take STAT 231 and 232 instead of MATH 127 and 128 will not be required to take this course.

+This is an option based on student's future plans.

++This is an option based on student's interest.

This program is designed to provide three sub-options to prepare students for first level career opportunities as community health educators, health teachers, or health program generalist, or for further study in community health and health education. Students who elect to become *community health educators* will be required to carry out two semesters of special problems (PUB HL 385-386) to take Community Development (PUB HL 302) and to have one semester in full time field training (PUB HL 382). Students who elect to become *health teachers* will be required to take the minimum education courses and carry out practice teaching for certification. Students who elect the *health program generalist* sub-option will be required to meet Divisional and University degree requirements. The curriculum permits a wide range of general courses with concentration and major courses during the Junior year (3rd year) and Senior year (4th year).

### ENVIRONMENTAL HEALTH

#### FRESHMAN YEAR

| 1st Semester     | Credits |
|------------------|---------|
| *RHET 100 or 110 | 3       |
| **MATH 127       | 3       |
| CHEM 111         | 3       |
| ZOOL 101         | 3       |
| PSYCH 101 or     |         |
| *SOCIOL 101      | 3       |

| 2nd Semester     |   |
|------------------|---|
| *RHET 100 or 110 | 3 |
| **MATH 128       | 3 |
| CHEM 112         | 3 |
| ZOOL 230         | 3 |
| SOCIOL 101       |   |
| or *PSYCH 101    | 3 |

\*May be taken either semester.

\*\*On basis of Placement tests and interest in advanced science.

If a language is elected, intermediate proficiency is required.

#### SOPHOMORE YEAR

| 1st Semester          | Credits |
|-----------------------|---------|
| PHYSIC 141            | 4       |
| CHEM 261, Organic     | 3       |
| CHEM 263, Org-Lab     | 1       |
| COINS 122, Fortran IV | 4       |
| Elective (C or D)     | 3       |
| 2nd Semester          |         |
| CHEM 262, Organic     | 3       |
| CHEM 264, Org-Lab     | 1       |
| PHYSIC 142            | 4       |
| Electives (C or D)    | 6       |

#### JUNIOR YEAR

| 1st Semester                                             | Credits |
|----------------------------------------------------------|---------|
| PUB HL 361, Environmental Health Practices               | 3       |
| PUB HL 320, Introduction to Health Administration        | 4       |
| MICBIO 250, General                                      | 4       |
| PUB HL 340, Public Health Statistics                     | 3       |
| PUB HL 350, Basic Public Health Laboratory Procedures    | 3       |
| 2nd Semester                                             |         |
| MICBIO 289, Pathogenic                                   | 4       |
| PUB HL 351, Advanced Public Health Laboratory Procedures | 3       |
| PUB HL 333, Communicable Disease Epidemiology            | 3       |
| Electives                                                | 3       |
| Summer: PUB HL 382, Field Training                       | 3-10    |

#### SENIOR YEAR

| 1st Semester                                             | Credits |
|----------------------------------------------------------|---------|
| PUB HL 362, Principles of Air Pollution                  | 3       |
| C E 271, Introduction to Environmental Pollution Control | 3       |
| CHEM 281, Elem Phys Chem or                              | 4       |
| PUB HL 385, Special Problems                             |         |
| Electives                                                |         |
| 2nd Semester                                             |         |
| PUB HL 363, Principles of Radiation Protection           | 3       |
| PUB HL 386, Special Problems                             | 3       |
| PUB HL 370, Introduction to Occupational Health          | 3       |
| Elective                                                 | 3       |

NOTE: Recommended courses include, SOCIOL 261, Population; POLSCI 220, Municipal Government; POLSCI 100, American Government, ECON 125, Elementary Economics; MGT 201, Principles of



Management; MGT 231, Administrative Theory (201 required as a prerequisite); POLSCI 272, Public Administration; SOCIOL 292, Introduction to Social Welfare; EDUC 266, Preparation and Use of Visual Aids.

## HEALTH LABORATORY SCIENCE

### FRESHMAN YEAR

| 1st Semester              | Credits |
|---------------------------|---------|
| RHET 100* (Lang & Writ)   | 3       |
| CHEM 111 (Gen Chem)       | 3       |
| MATH 127** (Calc Lif-Soc) | 3       |
| ZOOL 101* (Intro Zool)    | 3       |
| (C or D) Elective*        | 3       |
|                           | 15      |

### 2nd Semester

|                          |    |
|--------------------------|----|
| CHEM 112 (Gen Chem)      | 3  |
| MATH 128 (Calc Lif-Soc)  | 3  |
| (C or D) Elective*       | 3  |
| RHET 110* (Lang & Speak) | 3  |
| (C or D) Elective*       | 3  |
|                          | 15 |

### SOPHOMORE YEAR

| 1st Semester               | Credits |
|----------------------------|---------|
| CHEM 261, 263, Organic*    | 4       |
| PHYSIC 141 (Intro Physics) | 4       |
| PUB HL 340 (Statistics)    | 3       |
| Elective (C or D)          | 3       |
|                            | 14      |

### 2nd Semester

|                            |    |
|----------------------------|----|
| CHEM 262, 264, Organic     | 4  |
| PHYSIC 142 (Intro Phy. II) | 4  |
| ZOOL 230 (Sys hum body)    | 4  |
| Elective (C or D)          | 3  |
|                            | 15 |

### JUNIOR YEAR

| 1st Semester             | Credits |
|--------------------------|---------|
| MICBIO 250 (General)     | 4       |
| PUB HL 320 (Int. Hl Adm) | 4       |
| PUB HL 362 (Env. Hl Pr)  | 3       |
| (F, C, or D) elective*   | 3       |
|                          | 14      |

### 2nd Semester

|                             |    |
|-----------------------------|----|
| PUB HL 333 (Com. Dis. Epid) | 3  |
| MICBIO 280 (Path. Bact)     | 4  |
| BIOCHM 222 (Gen-biochem)    | 3  |
| (F, C, or D) Elective       | 6  |
|                             | 16 |

### SENIOR YEAR

| 1st Semester               | Credits |
|----------------------------|---------|
| PUB HL 350 (P.H. Lab Proc) | 3       |
| PUB HL 386 (Special Prob)  | 3       |
| Electives                  | 9       |
|                            | 15      |

### 2nd Semester

|                             |    |
|-----------------------------|----|
| PUB HL 351 (Adv Pub Hl Lab) | 3  |
| ENGL 331 (Tech Writ)        | 2  |
| Electives                   | 10 |
|                             | 15 |

TOTAL 120+

## MEDICAL TECHNOLOGY

### FRESHMAN YEAR

| 1st Semester              | Credits |
|---------------------------|---------|
| RHET 100* (Lang & Writ)   | 3       |
| CHEM 111 (Gen Chem)       | 3       |
| MATH 127** (Calc Lif-Soc) | 3       |
| ZOOL 101* (Intro Zool)    | 3       |
| (C or D) Elective*        | 3       |

### 2nd Semester

|                          |   |
|--------------------------|---|
| CHEM 112 (Gen Chem)      | 3 |
| MATH 128 (Calc Lif-Soc)  | 3 |
| (C or D) Elective*       | 3 |
| RHET 110* (Lang & Speak) | 3 |
| (C or D) Elective*       | 3 |

### SOPHOMORE YEAR

| 1st Semester               | Credits |
|----------------------------|---------|
| CHEM 261, 263 (Organic*)   | 4       |
| PHYSIC 141 (Intro Physics) | 4       |
| PUB HL 340 (Statistics)    | 3       |
| Elective (C or D)          | 3       |

### 2nd Semester

|                               |   |
|-------------------------------|---|
| CHEM 262, 264, (Organic)      | 4 |
| PHYSIC 142 (Intro Physics II) | 4 |
| ZOOL 230 (* Sys hum body)     | 4 |
| Elective (C or D)             | 3 |

### JUNIOR YEAR

| 1st Semester                                       | Credits |
|----------------------------------------------------|---------|
| PUB HL 355/655 Principles of Diagnostic Methods, I | 4       |
| CHEM 220 (Elem. Biochem)                           | 4       |
| MICBIO 250 (General)                               | 4       |
| Electives                                          | 3       |

### 2nd Semester

|                                                     |   |
|-----------------------------------------------------|---|
| PUB HL 356/656 Principles of Diagnostic Methods, II | 4 |
| CHEM 127 (Analytical)                               | 4 |
| MICBIO 280 (Pathogenic Bact)                        | 4 |
| MEDTEC 390 (Seminar)                                | 1 |
| Electives                                           | 3 |

### SENIOR YEAR

During the fourth year, students may serve a 12-month internship in a hospital laboratory accredited by the Council on Medical Education of the American Medical Association and the Board of Schools of Medical Technology of the American Society of Clinical Pathologists and one with which the University of Massachusetts has reciprocal affiliation. As placement opportunities are limited, prefer-

ence is given to those students with superior overall records. The student must complete all of the requirements set by the American Society of Clinical Pathologists to qualify for the Registry of Medical Technology. The student who begins a hospital internship for credit toward a degree must complete the full year of hospital training in order to be granted any credit. The course of training must be consistent at all times with the curriculum formulated by the Board of Schools of Medical Technology as approved by the American Society of Clinical Pathologists, the College of American Pathologists, the American Society for Medical Technology, and the Council on Medical Education and Hospitals of the American Medical Association.

THE CURRICULUM OFFERED BY THE HOSPITAL STAFF OF THE ACCREDITED AFFILIATED HOSPITAL SHALL HAVE THE FOLLOWING SCHEDULE:

| Title                            | Credits |
|----------------------------------|---------|
| MEDTEC 301 Clinical Microbiology | 10      |
| MEDTEC 302 Clinical Biochemistry | 10      |
| MEDTEC 303 Urinalysis            | 3       |
| MEDTEC 304 Hematology            | 10      |
| MEDTEC 305 Immuno-hematology     | 4       |
| MEDTEC 307 Clinical Serology     | 3       |

### 123 (I), (II). DYNAMICS OF PERSONAL AND COMMUNITY HEALTH

Development of understanding and attitudes relative to personal, family and community health needs. Attention to mental and physical well-being, drugs, sexuality, communicable and chronic diseases and health services.

### 200 (II). PEER SEX EDUCATION

A training course for selected students who will serve as peer resources with educational, counseling, and referral responsibilities. By arrangement with instructor only.

### 201 (I). PSE—IN-SERVICE TRAINING I

In-service training for Peer Sex Education counselors who are working with an assigned target group. By arrangement with instructor only. Prerequisite, PUB HL 391.

### 202 (II). PSE—ADVANCED IN-SERVICE TRAINING

In-service training for Peer Sex Education counselors who are working with an assigned target group. By arrangement with instructor only. Prerequisite, PUB HL 391.

### 263 (I), (II). INSTITUTIONAL HYGIENE AND SANITATION

Application of bacteriology to the prevention of food poisoning events. Evaluation of sanitary measures designed to prevent disease transmission via food and institutional environments.

### 264 (II). MICROSCOPY OF WATER

Microscopic forms of life, exclusive of bac-

teria. Counting and control of plankton in potable waters. Elements of limnology. Prerequisite, MICBIO 140. 3 class hours, 1 2-hour laboratory period.

**293 (I), 294 (II). PUBLIC HEALTH SEMINAR-II HEALTH SERVICES**

A seminar to develop an awareness of health services, particularly at the University; to promote health education and an awareness of minor health problems and first aid. Permission of instructor. Credit, 1.

**301 (I). PRINCIPLES OF COMMUNITY HEALTH EDUCATION**

Principles of health education. Exploration of methods and approaches to community health. Family, school, and community dimensions and potentials. Types and use of various methods leading to community action. Permission of instructor required. 3 class hours, 1 2-hour laboratory period. Credit, 4.

**302 (II). COMMUNITY DEVELOPMENT AND HEALTH EDUCATION**

Latest approaches in community development and community organization procedures. Exploratory readings, field assignments, and leadership emphasis; emphasis on coordinated community action. Permission of instructor required.

**304 (I), (II). SCHOOL HEALTH**

The principle concepts, methods, and dynamics of the organization of a school health program at the elementary and secondary level. Stress on planning and teaching in problem areas, (i.e., sex education, mental health and drugs). Prerequisite, junior or senior standing or permission of instructor.

**305 (II). CURRENT ISSUES IN HEALTH EDUCATION**

Latest issues in the field of health. Emphasis on controversial issues such as sex, drugs, and suicide education.

**311 (II). HUMAN SEXUALITY AND SEX EDUCATION**

Human sexuality as it may appear in the infant, the child, the adolescent, and the young married adult; examination and clarification of some of the crucial dynamics of the present era. Prerequisite, junior or senior standing and permission of instructor.

**312 (I). PUBLIC HEALTH AND FAMILY PLANNING**

Public Health problems associated with family health and population limitation. Historical factors, limitation methods, and barriers and facilitators related to family health and size. Prerequisites, PUB HL 123, SOCIOL 101 or permission of instructor.

**320 (I). INTRODUCTION TO HEALTH ADMINISTRATION**

Introduction to the philosophy, nature, and

scope of modern health services. Major health issues and programs. Organization of health services by local, national, and international health agencies. Prerequisites, SOCIOL 101 and ZOOL 101, or permission of instructor. 3 class hours, 1 2-hour laboratory period.

Credit, 4

**321 (II). ORGANIZATION AND ADMINISTRATION OF HEALTH PROGRAMS**

The organization of health programs to meet the needs of people. Emerging health problems and approaches to their solution. Emphasis on comprehensive planning and evaluation procedures. Prerequisites, PUB HL 320 or permission of instructor. 3 class hours, 1 2-hour laboratory period. Credit, 4.

**330 (I). PRINCIPLES OF EPIDEMIOLOGY**

An epidemiological perspective of health. General approaches for describing the patterns of disease in groups of people and elucidating the various processes involved in creating the differing levels of health in human groups. Lecture and lab examples illustrate a wide range of contemporary health problems.

**332 (I). CHRONIC DISEASE EPIDEMIOLOGY**

An analysis of the impact of selected chronic diseases on modern society. Current theories of cause and prevention related to present and future needs in health care and research efforts. Prerequisite, PUB HL 330 or permission of instructor.

**333 (II). COMMUNICABLE DISEASE EPIDEMIOLOGY**

A review of selected infectious diseases; emphasis on current theories of distribution, transmission and control.

**340 (I). PUBLIC HEALTH STATISTICS**

Principles of statistics applied to the evaluation of public health practices. Prerequisite, permission of instructor. 3 class hours, 1 2-hour laboratory period.

**350 (I). BASIC PUBLIC HEALTH LABORATORY**

Standard methods used in present day applied bacteriology; soils, dairy products, water and shellfish, and air. Prerequisite, MICBIO 140 or permission of instructor. 2 class hours, 2 2-hour laboratory periods.

**351 (II). ADVANCED PUBLIC HEALTH LABORATORY PROCEDURES**

Public Health laboratory procedures; field collection of samples, stream pollution study, food poisoning and infection, standard methods of food analysis. Prerequisite, permission of instructor. 1 4-hour laboratory and 1 2-hour laboratory period.

**352 (II). CLINICAL BACTERIOLOGY**

Procedures in clinical laboratory work. Pre-

requisite, MICBIO 250 or permission of instructor. 1 class hour, 2 2-hour laboratory periods. Credit, 4

**360 (II). PRINCIPLES OF ENVIRONMENTAL HEALTH**

The application of scientific knowledge to the control of man's environment as applied to human health. The physical, chemical and biological aspects of the air, water, land, food, housing, and occupation environments. Public Health or science majors with junior standing, or permission of instructor.

**361 (I). ENVIRONMENTAL HEALTH PRACTICES**

Control methods used by the environmental health and engineering practitioner. Topics include: water, waste water, solid wastes, food sanitation, vector control, housing, and accident control measures. Limited to environmental health and engineering majors. Other science majors by permission of instructor.

**362 (I). PRINCIPLES OF AIR POLLUTION**

Presents air pollution as a major public health problem. Topics include: air pollutants and their sources, health and economic effects, meteorology, sampling and analysis, air quality criteria and standards, control technology, control regulations and programs. Limited to public health and engineering majors. Other science majors by permission of instructor.

**363 (II). PRINCIPLES OF RADIATION PROTECTION**

Effect and control of radiation in the mammalian system. Includes sources, measurements, radio-sensitivity, radiation chemistry, cellular effects and acute and delayed effects in occupational, medical, and environmental exposures. Prerequisite, permission of instructor.

**370 (II). PRINCIPLES OF OCCUPATIONAL HEALTH**

The relation of the occupational environment to the health, efficiency, and well-being of workers. Emphasis on industrial hygiene, including toxic materials, physical stresses and control methods. Limited to public health and engineering majors. Other science majors by permission of instructor.

**382 (I), (II). SUPERVISED FIELD TRAINING**

A summer field training program with an official health agency, approved by the department. Must be under faculty supervision.

Credit, 3-10.

**385 (I), 386 (II). SPECIAL PROBLEMS**

Qualified seniors with permission of the department may arrange for independent work on special problems. Credit, 1-6.

**391 (I), 392 (II). SEMINAR**

Credit, 1.

## School of Physical Education

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

David C. Bischoff, *Dean*  
Professor M.A. Coffey; Assistant Professor J.L. Cobb

## General Physical Education

### 100G. PHYSICAL EDUCATION

Skills courses in sport, dance, equestrian, and other forms of physical activity. Open to all. Credit, 1.

### 101G. PHYSICAL EDUCATION

Theoretical and/or skill instruction in sport, dance and other forms of physical activity. 3 to 6 class hours or equivalent. Credit, 1-2.

## Exercise Science

*Head of Department:* Associate Professor D.W. Edington. Professors Campney, Kroll, Plagenhoef, Ricci; Associate Professor James.

### 101. EXERCISE HEALTH AND FITNESS

Critical analysis and interpretation of ideas, concepts, and practices relating to adaptation of body systems to stress imposed by physical activities. Credit, 2.

### 204. HUMAN ANATOMY

Gross structure and function of the body. 2 lecture hours, 1 2-hour laboratory period.

### 205. KINESIOLOGY

Anatomical application as a basis to a thorough understanding of mechanical problems in motor skills. Prerequisite EXSCI 204. 2 lecture hours, 1 2-hour laboratory period.

### 259. KINESIOTHERAPY

Programs of developmental activities, suited to interests and capacities of students with disabilities who are restricted from participation in activities of the general physical education program. Prerequisite, EXSCI 205.

### 260. INTRODUCTION OF SENSORIMOTOR TRAINING AND MENTAL RETARDATION

An analysis and interpretation of the sensorimotor domain of the mentally retarded with practicum exposure to training programs for such a population.

### 274. THEORY OF MEASUREMENT AND EVALUATION

Construction, interpretation, and evaluation of tests, including the theory of grading. Prerequisite, STAT 121.

### 278. PHYSIOLOGY OF EXERCISE

Application of basic physiological concepts of the program of physical education, emphasizing physiological effects and adjustments accruing from participation in physical activity. Prerequisite, ZOOL 135. 2 class hours, 1 2-hour laboratory period.

### 321. PHYSIOLOGICAL BASIS OF HUMAN PERFORMANCE

Analysis and interpretation of cardiovascular-pulmonary adjustment, metabolic requirement, and heat regulation during exercise. Prerequisite, EXSCI 278. 2 class hours, 1 2-hour laboratory period.

### 331. MECHANICAL ANALYSIS OF HUMAN MOTION

Application of the principles of mechanics to the analysis of human motion. Prerequisite, EXSCI 205 or equivalent. 2 class hours, 1 2-hour laboratory period.

### 341. MOTOR INTEGRATION

Examination of the control of muscular activity by the nervous system. Topics include basic motor system reflexes, cross transfer, fatigue, kinesthetic sense, lateral dominance, and neuromuscular facilitation techniques. Prerequisites EXSCI 205 and 278.

### 351. THEORY OF THERAPEUTIC EXERCISE

The theory of therapeutic exercise for the mentally retarded, physically handicapped and normal. Prerequisite, EXSCI 259 or equivalent.

### 352. PHYSICAL ACTIVITY AND MENTAL RETARDATION

Physical activity relative to the behavior of the mentally retarded. Prerequisite, EXSCI 259.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Professional Preparation in Physical Education

Choirperson: Assistant Professor Barber. Professors Locke, Vendien; Associate Professors Ogilvie, Riggs, Wallace; Assistant Professors Brosky, Rife, Shute; Instructors Callahan, Diggs, Evans, Griffin, Hart.

## MAJOR ACTIVITY COURSES

Primarily for majors in physical education. Instruction focuses both on skill in the activity and methods of learning to teach the skill. Other courses cover the wide spectrum of sports in this culture. Credit, 1.



102. Fundamentals
103. Hockey I
104. Gymnastics I
106. Soccer-Speedball-Flag Football
107. Basketball
108. Lacrosse-Softball
110. Synchronized Swimming and Aquatic Composition
111. Competitive Swimming and Diving
115. Gymnastics II
116. Gymnastic Teaching
117. Rhythmic Gymnastics and Routine Composition
121. Officiating Sports *Credit, 2.*
122. Officiating Gymnastics *Credit, 2.*
130. Gymnastics
131. Aquatics
132. Weight Training and Conditioning
133. Football Coaching
134. Basketball
135. Basketball Coaching
136. Baseball
137. Baseball Coaching
138. Gymnastic Coaching
139. Wrestling
140. Wrestling Coaching
141. Lacrosse
142. Lacrosse Coaching
143. Hockey
144. Hockey Coaching
145. Soccer
146. Soccer Coaching
147. Squash and Handball
148. Tennis Coaching
150. Swim for Handicapped
151. Aquatics
155. Educational Gymnastics
160. Bowling
161. Golf
162. Advanced Golf
163. Tennis and Badminton
165. Track and Field
166. Track and Field Coaching
167. Volleyball
170. Outdoor Education
180. Folk and Square Dance

#### 198, 199. OFFICIATING

For both men and women. Development of the techniques of officiating seasonal sports with practical experience.

#### 206. PERCEPTUAL MOTOR DEVELOPMENT

Motor development in the child, focusing on conditions affecting the learning of motor skills.

#### 253. PHYSICAL EDUCATION FOR ELEMENTARY SCHOOLS

Program content for elementary school physical education and methods used for teaching physical education activities at the elementary school level.

#### 254. PHYSICAL EDUCATION IN THE SCHOOL

Content and presentation of methods designed to prepare students for educational internship in the schools. The applicability of micor-teaching techniques to situations in teaching physical education activities.

#### 275. PREVENTION AND CARE OF INJURY IN ACTIVITY

Theory and techniques in preventing and treating all types of physical injuries. First aid treatment; therapeutic aids and clinical use of physiotherapy equipment. 2 class hours, 1 2-hour laboratory period.

#### 276. PRINCIPLES OF PHYSICAL EDUCATION

Aims and objectives in physical education; presentation and critical analysis of curricular, methodological and adapted principles as they apply to the teaching of physical education.

#### 277. PSYCHOLOGY OF COACHING

Analysis of psychological content in athletics and coaching. Topics include personality and motivation, mental health aspects, competitive spirit, sportsmanship, and selected problems in coaching pertaining to psychological factors. Prerequisites, PSYCH 101 and 263 or permission of instructor.

#### 370. ORGANIZATION AND ADMINISTRATION

Administrative theory and practice as they relate to the program and curriculum of physical education in the schools.

#### 381. ADMINISTRATION OF INTRAMURAL PROGRAMS

Objectives, tourney design, organization and administration of intramural programs. 2 class hours. *Credit, 2.*

#### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the department. *Credit, 1-6.*

#### 391. SEMINAR

Analysis of studies and issues in physical education.

#### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. *Credit, 4.*

#### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. *Credit, 1-5.*

#### Sport Studies

Head of Department: Professor H.J. Vander-Zwaag. Professors Lewis, Loy, Page, Spears;

Assistant Professors Graham, Gundersheim, and Toyama.

#### 200. SOCIOLOGY OF SPORT AND PHYSICAL ACTIVITY

Social action theory, group structure, social institutions, social processes, current cultural trends, and social problems in sport. Prerequisite, SOCIOL 101.

#### 201. PSYCHOLOGY OF SPORT AND PHYSICAL ACTIVITY

Variables of skilled performance; behavioral patterns and interactions in games, sports, and dance activities; evaluation of skilled performance. Prerequisite, PSYCH 101.

#### 202. HISTORY OF SPORT AND PHYSICAL ACTIVITY

A survey of the history of sport, dance, and other forms of organized, physical activity throughout the Western world. Prerequisite, HIST 100 or 101.

#### 203. PHILOSOPHY OF SPORT AND PHYSICAL ACTIVITY

A philosophical analysis of sport and physical activity. Consideration of the nature and values of sport and its role as a meaningful activity. Prerequisite, PHIL 105.

#### 261. WORLD HISTORY OF SPORT

Factors influencing the rise of sport and the role of sport in society. Prerequisite, SPORST 202.

#### 264. PHILOSOPHY OF SPORT

A philosophical analysis of key concepts which influence the objectives and content of various programs in the broad realm of sport. Prerequisite, SPORST 203 or equivalent.

#### 265. SOCIOLOGY OF SPORT

Sport as a social institution, including structure and function. Topics include theories explaining the role of sport in society; the incidence, form, and regulation of sport in society; physical activity in contemporary society; and the social psychology of sport, including personality, attitude, and motivation. Prerequisite, SPORST 200.

#### 362. HISTORY OF SPORT IN THE UNITED STATES

Sport in America from earliest times to the contemporary period. Emphasis on the social, political, and economic factors which affected the development of sport. Prerequisite, SPORST 261.

#### 363. COMPARATIVE SPORT

A comparative analysis of sport and athletics in selected countries. Emphasis on historical, cultural, and social values affecting the status of sports and recreation, and current international cooperation. Prerequisite, SPORST 261.

385, 386. SPECIAL PROBLEMS  
Individual study of a selected problem for qualified students. By arrangement with members of the department. Credit, 1-6.

398. SENIOR HONORS  
Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

399. SENIOR HONORS  
Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1.5.

## Leisure Studies and Services

Head of Department: Professor William E. Randall. Assistant Professors: Klar, Sherrow; Instructor Willmann.

### SOPHOMORE YEAR

| 1st Semester                  | Credits |
|-------------------------------|---------|
| LS&S 230, Group Leadership    | 3       |
| Humanities and Fine Arts      |         |
| Elective (C)                  | 3       |
| COMSTU 201, Public Speaking   | 3       |
| Program Activities Elective   | 3       |
| Sociology Elective*           | 3       |
| LS&S 104, Field Experience II | 1       |
|                               | 16      |

| 2nd Semester                          |    |
|---------------------------------------|----|
| LS&S 320, Leisure Service Facilities  | 3  |
| Math, or Natural Science Elective (E) | 3  |
| Social Science Elective**             | 3  |
| Psychology Elective                   | 3  |
| Option Course                         | 3  |
|                                       | 15 |

### JUNIOR YEAR

| 1st Semester                 | Credits |
|------------------------------|---------|
| LS&S 313, Leisure Service    |         |
| Programming                  | 3       |
| ENGL 337, Expository Writing | 3       |
| Social Science Elective**    | 3       |
| Two Option Courses           | 6       |
|                              | 15      |

| 2nd Semester                              |    |
|-------------------------------------------|----|
| LS&S 332, Supervision in Leisure Services | 3  |
| Option Courses                            | 6  |
| Arts and Sciences Electives               | 3  |
| Free Elective                             | 3  |
|                                           | 15 |

### SENIOR YEAR

| 1st Semester                                                   | Credits |
|----------------------------------------------------------------|---------|
| LS&S 352, Organization and Administration for Leisure Services | 3       |
| Option Course                                                  | 3       |
| Arts and Sciences Electives                                    | 3       |
| Free Electives                                                 | 6       |
|                                                                | 15      |

| 2nd Semester         |    |
|----------------------|----|
| LS&S 380, Internship | 15 |
|                      | 15 |

\*One of these three courses must be a "D" course.  
\*\*Select freely from Anthropology, Economics, Geography, Political Science, more Psychology, or more Sociology. Economics 125 and Political Science 100 recommended.

101. MAN AND LEISURE  
Concepts of leisure, play and recreation and their societal implications. Examination of leisure opportunities and experience with emphasis on the delivery of leisure services. Field trips.

103, 104. FIELD EXPERIENCE  
Leadership skills plus not less than 20 hours per semester of supervised experience as a volunteer in leadership or other appropriate clientele-oriented roles, in approved settings. Enrollment limited to LS&S majors. Credit, 1.

111. LEISURE ACTIVITY ANALYSIS  
Analysis of leisure activities in terms of inherent characteristics and values for various participant types. Leadership skills and resources needed for a broad variety of program areas.

112. LEISURE ACTIVITIES FOR SPECIAL POPULATIONS  
Pertinent characteristics of individuals and groups requiring adapted and/or modified programming. Providing leisure activities to meet the needs of these special populations. Practicum experience included. All day field trips. Prerequisites, LS&S 111 or permission of instructor, 2 class hours, 1 2-hour laboratory.

131. ORGANIZED CAMPING  
Operating procedures of organized camps. Camper guidance, program skills, and practical leadership experience. Two-night camping trip, plus one-day trip. 2 class hours, 1 2-hour laboratory.

230. GROUP LEADERSHIP  
Foundations and tools for leadership. Successful leadership techniques for large and small groups such as clubs and committees. Field trip. Non-major admission only by permission of instructor.

313. LEISURE SERVICE PROGRAMMING  
Critical determination of individual and group needs and objectives and the selection, planning, development and evaluation of comprehensive programs. Prerequisite, LS&S 111.

320. LEISURE SERVICE FACILITIES  
Principles, practices, and problems in the planning, development, and management of areas and structures in the facilitation of leisure programs and services. Prerequisite, LS&S 101, 111, or equivalent.

### 332. SUPERVISION IN LEISURE SERVICES

Nature, functions, principles, and methods of supervision in leisure services. The supervisory process as related to paid and volunteer staff. Prerequisite, LS&S 230 or equivalent.

### 351. INTRODUCTION TO OUTDOOR RECREATION

Characteristics, principles, and practices of outdoor recreation, including current developments; relationship to other uses of land and water resources. Field trips.

### 352. ORGANIZATIONS AND ADMINISTRATION FOR LEISURE SERVICES

A pragmatic approach to functions and methods for administrative personnel in the leisure service field. Problems, role simulation, field trip, guests. Prerequisites, LS&S 313, 320.

### 353. ENVIRONMENTAL INTERPRETATION

Principles and practices in interpretation for public appreciation of natural archaeological and historical features in parks, museums, and similar settings. Field trips. Prerequisites, 18 credits in one of the following areas: American history, anthropology, natural resources, or the natural sciences; and permission of instructor. 2 class hours, 1 2-hour laboratory period.

### 354. PERSPECTIVES IN THERAPEUTIC RECREATION

Historical and contemporary foundations and philosophies in therapeutic recreation. Professional functioning and state of the art are emphasized. Interdisciplinary relationships, research and demonstration needs, and future perspectives are analyzed. Field trips. Prerequisites, LS&S 112, EXSCI 204 or ZOOL 135, 18 credits in pertinent Psychology or Sociology, and junior or senior standing, or permission of instructor.

### 380. INTERNSHIP

Professional field experience with one or more approved cooperating leisure service agencies appropriate to the student's career choice. Open only to LS&S seniors who have completed the major option. LS&S 332 & 352, and who have at least a 2.0 cumulative quality point average. Full-time field placement throughout the semester. Credit, 15.

### 385, 386. SPECIAL PROBLEMS

Individual intensive study of an aspect of leisure studies and services and the presentation of results in written form. Credit, 1-6.

### 391. SEMINAR

Critical consideration of basic philosophies and problems in leisure studies and services. Prerequisite, LS&S 101 or 351. Credit, 1.

## Division of Military And Air Science

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with Department and/or Honors Office. Credit, 4.

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with Department and/or Honors Office. Credit, 1-5.

## Military Science

*Head of Department:* Professor (Colonel, USA) Baxter M. Bullock. Lecturers (Lieutenant Colonel) Gladfelder, (Captain) Ehrenreich (Captain) Dionne.

The Department of Military Science offers courses which are open to any student of the University or other institutions in the local area. In addition, the department conducts the Reserve Officers' Training Corps program for those desiring to earn a commission as an officer in the United States Army. Students electing to earn a commission must complete eight semesters or the equivalent of military science subjects. These eight semesters may be compressed into six academic semesters with permission of the department head. A student may receive constructive credit towards an army commission through attendance at a basic summer camp in lieu of the first two years of the ROTC program; veterans may receive appropriate constructive credit for military service. In addition to classroom instruction and seminars, participation is required in the department's leadership laboratory comprised of several weekend practicums during the year. Students are also required to complete a six-week advanced summer camp session at the end of the junior or senior year. The summer practicum combined with the leadership laboratory permits the application of theory presented in academic subjects. To be eligible to be enrolled as a cadet, students must possess the University-sponsored student health insurance or equivalent coverage.

Upon completion of University degree requirements and departmental requirements, the student is commissioned a Second Lieutenant in the U.S. Army. Students also participating in department-sponsored activities to include visits and guest lecturer presentations.

111(I). AMERICAN MILITARY HISTORY I  
American Military History from origins to 1930. Army organization for each war and post-war period; leadership techniques; principles of war; the development of tactics and equipment. 1 class hour. Credit, 1.

### 112(II). AMERICAN MILITARY HISTORY II

American Military History from 1930 to the present. Change in Army organization during the period; leadership techniques, principles of war; the development of tactics and equipment. 1 class hour. Credit, 1.

### 119(I). CONTEMPORARY MILITARY THEORY I

Introduction to the military; analysis, interpretation and usage of topographic maps and map substitutes; land navigation techniques; introduction to communications procedures and equipment. 2 class hours, laboratory for cadets. Credit, 2.

### 137(II). INTRODUCTION TO MILITARY LEADERSHIP AND MANAGEMENT

Analysis of military leadership through readings and discussion of leader and group behavior; communication systems, motivational theory and organizational structures; fundamentals and principles required by the junior officer as a manager and a leader. 3 class hours, laboratory for cadets.

### 251(I). ADVANCED MILITARY LEADERSHIP AND MANAGEMENT

Military instructional principles and their application; mission, organization and functions of the branches of the Army; integration of the branches of the Army into current divisional structure; Code of Conduct of the individual soldier. Prerequisite: permission of instructor. 3 class hours, laboratory for cadets.

### 252(II). ADVANCED CONTEMPORARY MILITARY THEORY

Principles of modern offensive and defensive military tactics; concepts of tactical communications; functions of command to include unit administration, supply, maintenance and officer and enlisted personnel management. Prerequisite: permission of instructor. 3 class hours, laboratory for cadets.

### 378(I). MILITARY LAW

The constitutional basis of powers; the constitution and the individual; the basic principles of criminal law; administration of military justice; and the rules of evidence. Prerequisite, junior or senior standing. 3 class hours, laboratory for cadets.

### 379(II). SEMINAR IN MILITARY LEADERSHIP AND MANAGEMENT

Managerial problems inherent in military staff planning and administration; perspective of defense and Army leadership, management, and organization in support of national security. Prerequisites: MILSCI 251 and junior or senior standing. 3 class hours, laboratory for cadets.

### 385(I), 386(II). SPECIAL PROBLEMS

Individual study of selected problems for qualified students. Credit, 1-6.

## Air Science

*Head of Department:* Professor (Colonel) Volpe. Assistant Professors (Major) Richardson, (Major) Sonoda, (Captain) Liquori.

The Department of Air Science offers courses of general interest to all University students and of specific interest to male and female students who wish to become officers in the United States Air Force. Requirements for an Air Force commission are as follows: 1) satisfactory completion of departmental course offerings. This can be accomplished through either a two- or a four-year program. Students in a four-year program take eight semesters of



departmental course offerings and attend a four-week summer training session on an active Air Force base at the end of the sophomore year. Those in a two-year program attend a six-week summer training session at the end of the sophomore year in lieu of the first two years of the ROTC program, and then complete the last four semesters of departmental course offerings. Students with previous ROTC instruction in either high school or college, with military school or service academy attendance, active military duty, or Civil Air Patrol training should consult the department for possible accreditation of this experience toward all or part of the first two years of ROTC. In addition to the classroom instruction, participation is required in the department's leadership laboratory, which consists of briefings and field trips designed to acquaint students with Air Force life, customs, and duties, and which entails participation in the operation of a cadet organization patterned after a military organization. 2) Satisfactory completion of the summer training session which, combined with the leadership laboratory, permits the practical application of theory presented in academic subjects and provides students an opportunity to see Air Force personnel at work on jobs similar to those the students will perform once on active duty.

Upon completion of University degree requirements and departmental requirements, the student is commissioned a Second Lieutenant in the U.S. Air Force. A student in the senior year may request a delay in reporting to active duty of up to two years in order to complete graduate or professional school.

## FRESHMAN YEAR

### 111 (I). THE U.S. AIR FORCE

Introduction to the mission, organizational structure, and operational concepts of the U.S. Air Force. Emphasis on U.S. strategic offensive and defensive forces. 1 class hour, 1 hour corps training. Credit, 1.

### 112 (II). U.S. MILITARY FORCES

Composition and deployment of U.S. general purpose forces and Air Force support forces. The mission, resources, and operation of tactical air forces in limited war and of Army, Navy, and Marine general purpose forces, their concepts and organization. 1 class hour, 1 hour corps training. Credit, 1.

## SOPHOMORE YEAR

### 123 (I). DEVELOPMENT OF AIR POWER I

Survey of principal persons, events, and concepts contributing to emergence of American military aviation as a separate air arm. Air power theories of Mitchell, Douhet, and Trenchard applied to subsequent experiences of the Army Air Forces. Credit, 1.

### 124 (II). DEVELOPMENT OF AIR POWER II

Emergence of the U.S. Air Force and its employment from Berlin Airlift through Vietnam. Assessment of the role of air power as an instrument of the military element of national power. Credit, 1.

## JUNIOR YEAR

### 235 (I). NATIONAL SECURITY FORCES IN CONTEMPORARY AMERICAN SOCIETY (I)

Political interrelationships between the military establishment and American society in the context of military professionalism, civil military relations, and the framework of defense policy making (constraint on U.S. defense policy in the international and domestic areas). 3 class hours, 1 hour corps training.

### 236 (II). NATIONAL SECURITY FORCES IN CONTEMPORARY AMERICAN SOCIETY (II)

Evolution of U.S. military strategy in the nuclear age; emphasis on arms races, arms control, and escalation. Implementation of defense policy; emphasis on bureaucratic politics and organizational theory in policy formulation and implementation. 3 class hours, 1 hour corps training.

### 233 (II). FLIGHT INSTRUCTION PROGRAM — CLASSROOM PHASE

A basic ground school to introduce students to private flying at the light aircraft level. Includes basic aerodynamics, navigation, radio navigation, meteorology, and federal regulations. 2 class hours. Permission of department required. Credit, 2.

## SENIOR YEAR

### 341 (I). THE PROFESSIONAL OFFICER I

Military management functions, the role of command and staff in decision-making, the factors relating to effective leadership, quantitative techniques, game theory, and the traditional aspects of power, authority, and status. 3 class hours, 1 hour corps training.

### 342 (II). THE PROFESSIONAL OFFICER II

The professional concept of military duty, the framework of military law, and a practical introduction to active duty service as a professional officer. 3 class hours, 1 hour corps training.

### 343 (I), (II). FLIGHT INSTRUCTION PROGRAM — FLIGHT PHASE

For senior, pilot-qualified Air Force ROTC cadets only. Twenty-five hours of flight instruction in light aircraft; emphasis on cross-country navigation, radio navigation, safety, and basic visual flight maneuvers. Prerequisite, AS 233. By arrangement. Credit, 1.

## Honors Program

Director: George J. Armelagos; Associate Director: Mary Sirridge.

Honors Program courses are open to any qualified student. One need not be a Commonwealth Scholar nor a member of any departmental Honors Program to be eligible to take Honors Courses. However, like other University courses, some Honors Courses have prerequisites; some require permission of instructor.

Most Honors Courses, which number approximately 200 each semester, and are drawn from all departments of the University, are designated by adding an Honors Colloquia to departmental courses, giving them one additional credit.

### 181 (I), 182 (II), 183 (I), 184 (II), 185 (I), 186 (II).

#### HONORS — STUDIES IN THE HUMANITIES (C)

An area of one or more of the humanistic disciplines, such as art, literature, music, history, or philosophy. For Honors Program freshmen and sophomores; others by permission of the Director of Honors.

### 187 (I), 188 (II), 189 (I), 190 (II), 191 (I), 192 (II).

#### HONORS — STUDIES IN THE SOCIAL SCIENCES (D)

An area of one or more of the social sciences, such as economics, psychology, sociology, or anthropology. For Honors Program freshmen and sophomores; others by permission of the Director of Honors.

### 193 (I), 194 (II), 195 (I), 196 (II), 197 (I), 198 (II).

#### HONORS — STUDIES IN THE SCIENCES AND MATHEMATICS (E)

An area of one or more of the sciences, such as physics, chemistry, botany, astronomy, geology, or zoology, or of mathematics. For Honors Program freshmen and sophomores; others by permission of the Director of Honors.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with the Director of Honors. Credit, 1-6.

### 387 (I), 388 (II). HONORS — INTERDISCIPLINARY STUDIES: SENIOR COLLOQUIUM

An interdisciplinary seminar for Honors Program seniors; open by invitation only.

### 391 (I), 392 (II), 393 (I), 394 (II). HONORS — INTERDISCIPLINARY SEMINAR

A problem requiring the use of several disciplines. For Honors Program juniors and seniors; others by permission.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with the Director of Honors. *Credit, 4.*

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with the Director of Honors.

*Credit, 1-5.*

## Legal Studies Program

Director: Assistant Professor M. Ethan Katsh.  
Associate Professor John J. Bonsignore;  
Assistant Professors Stephen Arons, Peter d'Errico, Ronald M. Pipkin, Janet Rifkin.

The Legal Studies Program provides an opportunity for students to pursue courses about the nature and function of law; it presents field work and research opportunities, conferences, practica, and special courses about law for the University community.

The major in Legal Studies is individually designed around a basic core of study. This is not a "pre-law" preparatory program.

The Legal Studies Program is allied with a range of faculty and courses in the Five Colleges. A Five-College Legal Studies Catalog lists many of the offerings available. The courses are open to anyone interested in examining the interrelationships of law and society.

Admission to the major is available to a small number of undergraduates through a selection process in which a study plan is negotiated for each student by the student and major advisor according to their mutual interests.

Each major is required to take LEGAL 201, 202, 264, 383, 385-386, and 391, as well as an additional 15 credits of study drawn from the law-related offerings of other disciplines in the Five-College Legal Studies Curriculum.

### 201. INTRODUCTION TO LEGAL STUDIES

The purposes and functions of law in society. Legal reasoning and decision-making; the impact of law upon persons directly and indirectly involved with it; the relationship between political, social, and economic power and law; the relationship of law and morality; and the problems of achieving justice in contemporary society.

### 202. INTERMEDIATE LEGAL STUDIES

Specific views of law at a more advanced level; for example, the legal imagination; law, community and consciousness; law, prisons and society.

### 242. THE LEGAL IMAGINATION

Legal theory and literature as tools in analyzing how the law communicates with, characterizes, labels, judges and categorizes individuals. How the law can be for some an interesting intellectual challenge, a vehicle for social change, and a logical system, and for others, a lifeless, mysterious, necessary evil.

### 264. URBAN LAW

The efficacy of the legal system in dealing with major urban social problems. Materials concentrated in one or two problem areas, such as housing, crime or welfare.

### 271. SEX ROLES, LAW & SOCIETY

Law in society, how this interaction fosters the treatment and classification of individuals according to their sex. The role of women in society and how the law affects this status.

### 383. LEGAL RESEARCH AND WRITING

Development of one area of legal doctrine as a means of learning how to read and analyze judicial opinions and statutes and as a vehicle for legal research and writing.

### 385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the program. *Credit, 1-6.*

### 391. SEMINAR

Topics covered reflect student and faculty interests.

### 398. SENIOR HONORS

Senior research, thesis option. By arrangement with the program and/or Honors Office.

*Credit, 4.*

### 399. SENIOR HONORS

Continuation of 398. Thesis mandatory. By arrangement with the program and/or Honors Office. *Credit, 1-5.*

## RELATED COURSES

ANTH 336. Political Anthropology

ANTH 338. Anthropology of Law and Conflict

POLSCI 362. Politics, Law and Judicial Behavior

## Rhetoric

Acting Director of Program: Jane Blankenship.  
Director of Communication Skills Center: Shirley DeShields.

Director of English as a Second Language Component: Clodomiro Cabañas. Director of Rhetoric Center for Instructional Improvement: Sara Stelzner.

The Rhetoric faculty is composed of faculty members from the Departments of English, Communication Studies, and others.

With certain exceptions for advanced placement, the University Core in Rhetoric requires the completion of one course in Group I, and one other course in Rhetoric. The requirement is expected to be completed by the end of the sophomore year.

Within the standard two-semester sequence in composition and speech, the Pro-

gram in General Rhetoric offers flexibility and choice, as well as a systematic theory of language. It asks two questions: How do we use words and styles to express ourselves and communicate with our world? How can we improve this expression and communication, and what do we mean by "improvement?" The Program confronts at a basic or unspecialized level, many of the "languages" through which people share their experience — oral and written, kinesics, film, electronics. Fuller details on the courses in the Program are available at the Rhetoric Office, 308C Bartlett Hall.

## GROUP I

### 100 (I), (II). LANGUAGE AND WRITING (B)

How words and styles are chosen to express ourselves and our world, with particular attention to the written language. Varied opportunities for written expression, on different subjects for different purposes and audiences. Emphasizes responsible choice in the language used in both academic and everyday life.

### 102. READING, COMPREHENSION AND GRAMMAR (B)

Laboratory course for students with special problems in reading, grammar, study skills, etc. Enrollment only by permission of Skills Center. *Credit varies.*

### 105, 106, 107. ENGLISH AS A SECOND LANGUAGE

Rhetoric courses offered for the non-native English speaking student. Enrollment by permission of Program. *Credit varies.*

### 110 (I), (II). LANGUAGE AND SPEAKING (B)

The process and act of communication, emphasizing meaning and the principles of and the choices available in the use of language. The rhetorical nature of our world, and the means and ends of effective and ethical communication. The concepts of communication, meaning, and language; and the principles and problems of informative and persuasive speaking.

## GROUP II

### 140 (I), (II). VOICES OF IMAGINATIVE WRITING (B)

Various kinds of verbal imaginative expressions in our culture — rock lyrics and modern poems, short fiction, drama — to enable more articulate and critical reading and more resourceful and daring writing. Exercises in critical reading or analysis balanced by frequent "creative" writing activities in various genres; "playing" at self-expression and self-definition.

145 (I), (II). CRITICISM AND THE  
THEATRICAL ARTS (B)

An opportunity to sharpen critical judgment about theatre. Aims at development of informal criticism into well-reasoned judgments of theatrical art, using as subject matter current local offerings in theatre, film and dance, and participation in laboratory projects.

165 (I), (II). MODERN PUBLIC  
DISCOURSE (B)

The analysis of contemporary rhetorical discourse; how it works and why it sometimes fails. Emphasis on oral political discourse, but a wide variety of communication situations are studied to discover the relationship of source, message and receiver. The interrelation of language and thought with the environment in which they occur examined through lectures, discussion, films, tapes, and multimedia presentations.

180 (I), (II). THE RHETORIC OF FILM (B)

The process of communication focusing on the languages of film. Emphasis on relationships between techniques and meaning in film and the ways film uses the rhetorical methods of oral and written language. Each student views a significant number of films, reads related essays, writes frequent papers, and has an opportunity to write a brief scenario or (in some cases) make a short film.

385, 386. SPECIAL PROBLEMS

Individual study of a selected problem for qualified students. By arrangement with members of the program. *Credit, 1-6.*



# Administrative Officers

## University System

Robert Wood, Ph.D. (Harvard University), *President*  
Ernest A. Lynton, Ph.D. (Yale University), *Senior Vice President for Academic Affairs*  
Jay Janis, B.A. (Yale University), *Senior Vice President for Management and Business Affairs*  
Nan S. Robinson, M.A. (Radcliffe College), *Vice President for Planning*  
Gladys Hardy, B.A. (Sarah Lawrence College), *Secretary*  
Kenneth W. Johnson, B.S. (University of Vermont), *Treasurer*  
Adam Yarmolinski, LL.B. (Yale University), *Ralph Waldo Emerson Professor of the University*  
Rev. Michael P. Walsh, Ph.D. (Fordham University), *Academic Adviser to the President*

## Amherst Campus

### OFFICE OF THE CHANCELLOR

Randolph W. Bromery, Ph.D. (Johns Hopkins University), *Chancellor*  
James I. DeShields, Ed.D. (University of Massachusetts), *Assistant to the Chancellor*  
Douglas R. Forsyth, Ph.D. (Colorado State University), *Assistant to the Chancellor*  
Warren W. Gulko, Ph.D. (University of Minnesota), *Director of Budgeting and Institutional Studies*  
H. J. Littlefield, Jr., B.S. (Kings Point), *Director of Planning*  
Daniel M. Melley, M.S. (Boston University), *Director of Public Affairs*  
Sidney Myers, J.D. (Boston University Law School), *Staff Attorney*  
George A. Norton, B.S.M.E. (University of Maine), *Director, Physical Plant*  
Charlotte Rahaim, Ed.D. (University of Massachusetts), *Assistant to the Chancellor*  
Zina Tillona, D.M.L. (Middlebury College), *Assistant to the Chancellor*

### OFFICE OF THE VICE CHANCELLOR FOR ACADEMIC AFFAIRS AND PROVOST

Dean Alfange, Jr., Ph.D. (Cornell University), *Acting Vice Chancellor for Academic Affairs and Provost*  
David C. Bischoff, Ph.D. (Pennsylvania State University), *Associate Provost*

Vere C. Chappell, Ph.D. (Yale University), *Acting Associate Provost*  
Robert L. Woodbury, Ph.D. (Yale University), *Associate Provost for Special Programs*

## ACADEMIC DEANS

Jeremiah M. Allen, Ph.D. (University of Colorado), *Dean of the Faculty of Humanities and Fine Arts, College of Arts and Sciences*  
David C. Bischoff, Ph.D. (Pennsylvania State University), *Dean of the School of Physical Education*  
Vere C. Chappell, Ph.D. (Yale University), *Acting Dean of the Graduate School*  
William A. Darity, Ph.D. (University of North Carolina at Chapel Hill), *Dean of the School of Health Sciences*  
Louis Fischer, Ph.D. (Stanford University), *Acting Dean of the School of Education*  
Glen Gordon, Ph.D. (University of Chicago), *Acting Dean of The Faculty of Social and Behavioral Sciences, College of Arts and Sciences*  
George Odiorne, Ph.D. (New York University), *Dean of the School of Business Administration*  
Kenneth G. Picha, Ph.D. (University of Minnesota), *Dean of the School of Engineering*  
Seymour Shapiro, Ph.D. (University of Michigan), *Dean of the Faculty of Natural Sciences and Mathematics, College of Arts and Sciences*  
Arless A. Spielman, Ph.D. (University of Minnesota), *Dean of the College of Food and Natural Resources; Director, Experiment Station and Extension Service*

### OFFICE OF THE VICE CHANCELLOR FOR STUDENT AFFAIRS

Robert W. Gage, M.D. (Harvard Medical School), *Vice Chancellor for Student Affairs*  
Barry W. Averill, B.S. (University of Kentucky), *Director of Health Services*  
William F. Field, Ph.D. (University of Maryland), *Dean of Students and Interim Director of the Campus Center*  
Sally A. Freeman, M.A. (New York University), *Director of Student Development Center*  
David L. Johnston, M.A. (State University of New York at Albany), *Director of Public Safety*

*Director of Residential Life (Position vacant)*  
William D. Tunis, Ph.D. (University of Massachusetts), *Director of Personnel and Financial Services*

## OFFICE OF ADMINISTRATIVE SERVICES

John L. DeNyse, B.B.A. (University of Massachusetts), *Director of Personnel and Financial Services*  
Jake E. Bishop, LL.B. (LaSalle Extension University), *Director of Procurement*  
William H. Maus, B.B.A. (Northeastern University), *Controller*  
Harold Scott Overing, *Coordinator of Employee/Labor Relations*

## FIVE COLLEGE COOPERATION

E. Jefferson Murphy, Ph.D. (University of Connecticut), *Coordinator*

## CHAPLAINS

Rev. Frank Dorman, M. Div. (Drew Theological School), *Member, United Christian Foundation Ministry*  
Ms. Ruth Fessenden, B.A. (University of Massachusetts), *Member, United Christian Foundation Ministry*  
Rev. Peter Sabey, Th.M. (Princeton Seminary), *Member, United Christian Foundation Ministry*  
Rev. Leo A. Leclerc, B.A. (University of Montreal), *Director of the Newman Center and Chaplain to Roman Catholic Students*  
Rev. Merle L. Lavoie, M.A. (University of Louvain, Belgium), *Chaplain to Roman Catholic Students*  
Rev. J. Joseph Quigley, B.S. (Fordham University), *Chaplain to Roman Catholic Students*  
Rabbi Savi Perlmutter, M.A. (Temple University), *Chaplain to Jewish Students*

## Boston Campus

Carlo Golino, Ph.D. (University of California at Berkeley), *Chancellor*

## Worcester Campus

Roger J. Bulger, M.D. (Harvard University), *Chancellor and Dean of the Medical School*

# Index

|                                                 |     |                                             |     |                                       |     |
|-------------------------------------------------|-----|---------------------------------------------|-----|---------------------------------------|-----|
| Academic Regulations                            | 13  | Food Science and Nutrition                  | 164 | Overseas Study                        | 29  |
| Accounting                                      | 139 | Forestry and Wildlife Management            | 166 | Park Administration                   | 171 |
| Advanced Placement                              | 6   | Five College Astronomy                      | 118 | Part-Time Students                    | 13  |
| Afro-American Studies                           | 71  | French                                      | 85  | Payments Due                          | 17  |
| Agricultural Engineering                        | 163 | General Business                            | 141 | Persian                               | 136 |
| Air Science                                     | 183 | Geography                                   | 110 | Philosophy                            | 96  |
| Animal Sciences                                 | 173 | Geology                                     | 109 | Physical Education, School of         | 180 |
| Anthropology                                    | 121 | Germanic Languages and Literature           | 88  | Physics                               | 116 |
| Arabic                                          | 136 | Global Survival, Freshman Year Program      | 28  | Plant and Soil Sciences               | 172 |
| Armenian                                        | 136 | Graduation Requirements                     | 14  | Plant Pathology                       | 171 |
| Art                                             | 73  | Greek                                       | 80  | Polish                                | 99  |
| Arts and Sciences, College of                   | 70  | Health Laboratory Science                   | 178 | Political Science                     | 125 |
| Arts and Sciences Courses                       | 71  | Health Sciences, School of                  | 174 | Portuguese                            | 99  |
| Asian Studies                                   | 77  | Hebrew                                      | 135 | Pre-Dental                            | 137 |
| Astronomy                                       | 118 | History                                     | 90  | Pre-Medical                           | 137 |
| Bachelor's Degree with Individual Concentration | 27  | Home Economics                              | 168 | Pre-Veterinary                        | 137 |
| Biochemistry                                    | 104 | Home Economics Education                    | 168 | Project 10                            | 30  |
| Botany                                          | 104 | Honors                                      | 28  | Psychology                            | 132 |
| Business Administration, School of              | 138 | Honors Program                              | 184 | Public Health                         | 177 |
| Chemical Engineering                            | 151 | Hotel, Restaurant and Travel Administration | 169 | Readmission                           | 5   |
| Chemistry                                       | 106 | Human Development                           | 149 | Regional Planning                     | 170 |
| Chinese                                         | 77  | Humanities and Fine Arts                    | 71  | Registration                          | 18  |
| Civil Engineering                               | 152 | Industrial Engineering                      | 157 | Regulations, Academic                 | 13  |
| Classics                                        | 79  | Italian                                     | 87  | Requirements, Dining                  | 16  |
| Classification of Students                      | 13  | Japanese                                    | 78  | Requirements, Graduation              | 14  |
| Communication Disorders                         | 174 | Journalistic Studies                        | 85  | Requirements, Residence               | 15  |
| Communication Studies                           | 128 | Judaic Studies                              | 135 | Rhetoric                              | 185 |
| Comparative Literature                          | 81  | Landscape Architecture                      | 170 | Russian                               | 98  |
| Computer and Information Science                | 107 | Latin                                       | 80  | Second Bachelor's Degree              | 14  |
| Computer Systems Engineering                    | 155 | Latin American Studies                      | 135 | Slavic Languages and Literatures      | 98  |
| Course Directory                                | 70  | Legal Studies                               | 28  | Social and Behavioral Sciences        | 121 |
| Credits, By Special Examination                 | 6   | Leisure Studies                             | 182 | Sociology                             | 129 |
| Dance                                           | 96  | Linguistics                                 | 93  | Southwest Residential College Program | 30  |
| Danish                                          | 89  | Management                                  | 142 | Soviet and East European Studies      | 138 |
| Dutch                                           | 90  | Marketing                                   | 143 | Spanish                               | 100 |
| Economics                                       | 123 | Mathematics                                 | 111 | Special Programs                      | 27  |
| Education, School of                            | 144 | Mechanical Engineering                      | 158 | Statistics                            | 114 |
| Electrical and Computer Engineering             | 155 | Medical Technology                          | 178 | Study Abroad                          | 29  |
| Engineering, School of                          | 150 | Microbiology                                | 115 | Swedish                               | 90  |
| English                                         | 82  | Military Science                            | 183 | Teacher Certification                 | 145 |
| Entomology                                      | 162 | Music                                       | 94  | Teacher Preparation Programs          | 144 |
| Environmental Design                            | 170 | Natural Resources                           | 166 | Textiles and Clothing                 | 168 |
| Environmental Health                            | 177 | Natural Sciences and Mathematics            | 104 | Theatre                               | 102 |
| Environmental Sciences                          | 162 | Near Eastern Studies                        | 136 | Turkish                               | 136 |
| Examinations, Credit by Special                 | 6   | Nursing                                     | 175 | University Year For Action            | 31  |
| Exercise Science                                | 180 | Operations Research                         | 157 | University Without Walls              | 31  |
| Finance                                         | 140 | Orchard Hill Residential College Program    | 29  | Veterinary and Animal Sciences        | 173 |
| Fisheries Biology                               | 167 |                                             |     | Wildlife Biology                      | 167 |
| Food Economics                                  | 163 |                                             |     | Wood Technology                       | 167 |
| Food and Agricultural Engineering               | 163 |                                             |     | Zoology                               | 119 |
| Food and Natural Resources, College of          | 162 |                                             |     |                                       |     |

## **Where to Write for Further Information**

### **Admissions**

William D. Tunis, *Dean of Admissions,*  
*Records and Financial Aid, Whitmore*

### **Placement and Guidance Services**

*Director, Student Development Center,*  
*Berkshire House*

### **Expenses, Payments**

Robert R. Mishol, *Bursar, Whitmore*

### **Graduate School**

*Dean, Graduate Research Center*

### **Housing**

J. Bruce Cochrane, *Whitmore*

### **Financial Aid**

Richard A. Dent, *Director (Loans &  
Scholarships), Whitmore*

### **Academic Records and Transcripts**

Ralph D. Jones, *Registrar, Whitmore*

### **Stockbridge School of Agriculture**

John W. Denison, *Director, Stockbridge  
Hall*

### **Student Affairs**

William F. Field, *Dean of Students,*  
*Whitmore*

### **Summer Session**

*Office of the Provost, Whitmore*

### **Admissions at Boston**

*Director of Admissions*

### **Admissions at Worcester**

*Office of Admissions*

### **PLEASE NOTE**

All correspondence concerning the *University of Massachusetts at Amherst* should be addressed to the appropriate office, *University of Massachusetts, Amherst, MA 01003.*

All correspondence concerning the *University of Massachusetts at Boston* should be addressed to: *Columbia Point, Boston, MA 02115.*

All correspondence concerning the *University of Massachusetts Medical School* should be addressed to: *55 Lake Avenue North, Worcester, MA 01605.*

## **The New England Association of Colleges and Secondary Schools**

The University of Massachusetts at Amherst is accredited by the New England Association of Colleges and Secondary Schools. The Association accredits schools and colleges in the six New England states. Membership in one of the six regional accrediting associations in the United States indicates that the school or college has been carefully evaluated and found to meet standards agreed upon by qualified educators. Colleges support the efforts of public-school and community officials to have their secondary schools meet the standards of membership.



ADMISSIONS OFFICE  
WHITMORE ADMINISTRATION BUILDING  
UNIVERSITY OF MASSACHUSETTS  
AMHERST, MASSACHUSETTS 01003

If undeliverable, return postage guaranteed

NON-PROFIT ORG.  
U.S. POSTAGE  
PAID  
Permit No. 2  
Amherst, Ma. 01003

*1976-77  
Graduate  
School  
Bulletin  
University of  
Massachusetts  
at Amherst*

October 1976

The Graduate School Bulletin is published annually. The Graduate School Bulletin for the sessions of 1976-77 is part of the One Hundred and Twelfth Annual Report of the University of Massachusetts and in conjunction with the Undergraduate Catalog of the University it constitutes Part II of Public Document 31 (Sec. 8, Chapter 75, of the General Laws of Massachusetts).

Information contained in this Bulletin is current as of May, 1976.



*1976-77*

*Graduate School  
Bulletin*

*University of Massachusetts  
at Amherst*





# *Contents*

|                                                            |     |
|------------------------------------------------------------|-----|
| ACADEMIC CALENDARS .....                                   | 4   |
| AMHERST CAMPUS MAP .....                                   | 6   |
| TRUSTEES OF THE UNIVERSITY .....                           | 8   |
| ADMINISTRATIVE OFFICERS .....                              | 9   |
| GENERAL INFORMATION .....                                  | 10  |
| The University .....                                       | 10  |
| Application Procedures for Admission and Readmission ..... | 14  |
| Tuition and Fees .....                                     | 15  |
| Housing .....                                              | 17  |
| Assistantships and Fellowships .....                       | 18  |
| Programs Offered .....                                     | 19  |
| Requirements for Doctoral Degrees .....                    | 21  |
| Doctoral Dissertation .....                                | 22  |
| Requirements for Master's Degrees .....                    | 23  |
| Master's Thesis .....                                      | 25  |
| Graduate Reading Examination in Foreign Languages .....    | 25  |
| General Regulations .....                                  | 25  |
| Special Services Available to Graduate Students .....      | 27  |
| Non-Discrimination Policy .....                            | 28  |
| DESCRIPTION OF PROGRAMS .....                              | 29  |
| ASSOCIATED GRADUATE FACULTY .....                          | 201 |
| INDEX .....                                                | 206 |



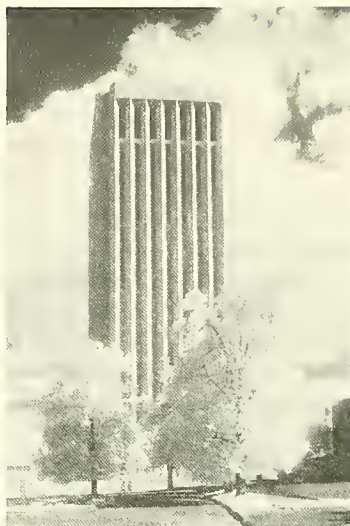
## *1976-77 Academic Calendar*

|                         |                                                             |
|-------------------------|-------------------------------------------------------------|
| Wednesday, September 1  | Registration for graduate students.                         |
| Thursday, September 2   | Classes begin.                                              |
| Friday, September 10    | Last day to register.                                       |
| Wednesday, September 15 | Last day to add courses.                                    |
| Friday, October 1       | Application deadline for Spring 1977 admission.             |
| Monday, October 11      | Holiday.                                                    |
| Wednesday, October 13   | Last day to drop courses with DR.                           |
| Thursday, November 11   | Holiday.                                                    |
| Monday, November 15     | Spring semester preregistration week begins.                |
| Wednesday, November 24  | Thanksgiving recess begins after last class.                |
| Monday, November 29     | Classes resume.                                             |
| Thursday, December 16   | Final examinations begin.                                   |
| Wednesday, December 22  | Final examinations end; Christmas recess begins.            |
| Friday, December 31     | Degree requirements deadline for February 1, 1977 degrees.  |
| Monday, January 24      | Registration for graduate students.                         |
| Tuesday, January 25     | Classes begin.                                              |
| Monday, January 31      | Last day to register.                                       |
| Monday, February 7      | Last day to add courses.                                    |
| Monday, February 21     | Holiday.                                                    |
| Tuesday, March 1        | Application deadline for Summer or Fall 1977 admission.     |
| Monday, March 7         | Last day to drop courses with DR.                           |
| Saturday, March 19      | Spring recess begins after last class.                      |
| Monday, March 28        | Classes resume.                                             |
| Monday, April 18        | Holiday.                                                    |
| Monday, April 25        | Fall semester preregistration week begins.                  |
| Friday, April 29        | Degree requirements deadline for May 21, 1977 degrees.      |
| Thursday, May 12        | Final examinations begin.                                   |
| Wednesday, May 18       | Final examinations end.                                     |
| Saturday, May 21        | Commencement.                                               |
| Wednesday, August 31    | Degree requirements deadline for September 1, 1977 degrees. |

## *1977-78 Academic Calendar*

|                         |                                                             |
|-------------------------|-------------------------------------------------------------|
| Wednesday, August 31    | Registration for graduate students.                         |
| Thursday, September 1   | Classes begin.                                              |
| Monday, September 5     | Holiday.                                                    |
| Friday, September 9     | Last day to register.                                       |
| Wednesday, September 14 | Last day to add courses.                                    |
| Saturday, October 1     | Application deadline for Spring 1978 admission.             |
| Monday, October 10      | Holiday.                                                    |
| Wednesday, October 12   | Last day to drop courses with DR.                           |
| Friday, November 11     | Holiday.                                                    |
| Monday, November 14     | Spring semester preregistration week begins.                |
| Wednesday, November 23  | Thanksgiving recess begins after last class.                |
| Monday, November 28     | Classes resume.                                             |
| Thursday, December 15   | Final examinations begin.                                   |
| Wednesday, December 21  | Final examinations end; Christmas recess begins.            |
| Friday, December 30     | Degree requirements deadline for February 1, 1978 degrees.  |
| Monday, January 23      | Registration for graduate students.                         |
| Tuesday, January 24     | Classes begin.                                              |
| Monday, January 30      | Last day to register.                                       |
| Monday, February 6      | Last day to add courses.                                    |
| Monday, February 20     | Holiday.                                                    |
| Wednesday, March 1      | Application deadline for Summer or Fall 1978 admission.     |
| Monday, March 6         | Last day to drop courses with DR.                           |
| Saturday, March 18      | Spring recess begins after last class.                      |
| Monday, March 27        | Classes resume.                                             |
| Monday, April 17        | Holiday.                                                    |
| Monday, April 24        | Fall semester preregistration week begins.                  |
| Friday, April 28        | Degree requirements deadline for May 20, 1978 degrees.      |
| Thursday, May 11        | Final examinations begin.                                   |
| Wednesday, May 17       | Final examinations end.                                     |
| Saturday, May 20        | Commencement.                                               |
| Thursday, August 31     | Degree requirements deadline for September 1, 1978 degrees. |

University  
Library



Graduate Research Center



Lincoln Campus Center

<Herter Hall and the Library

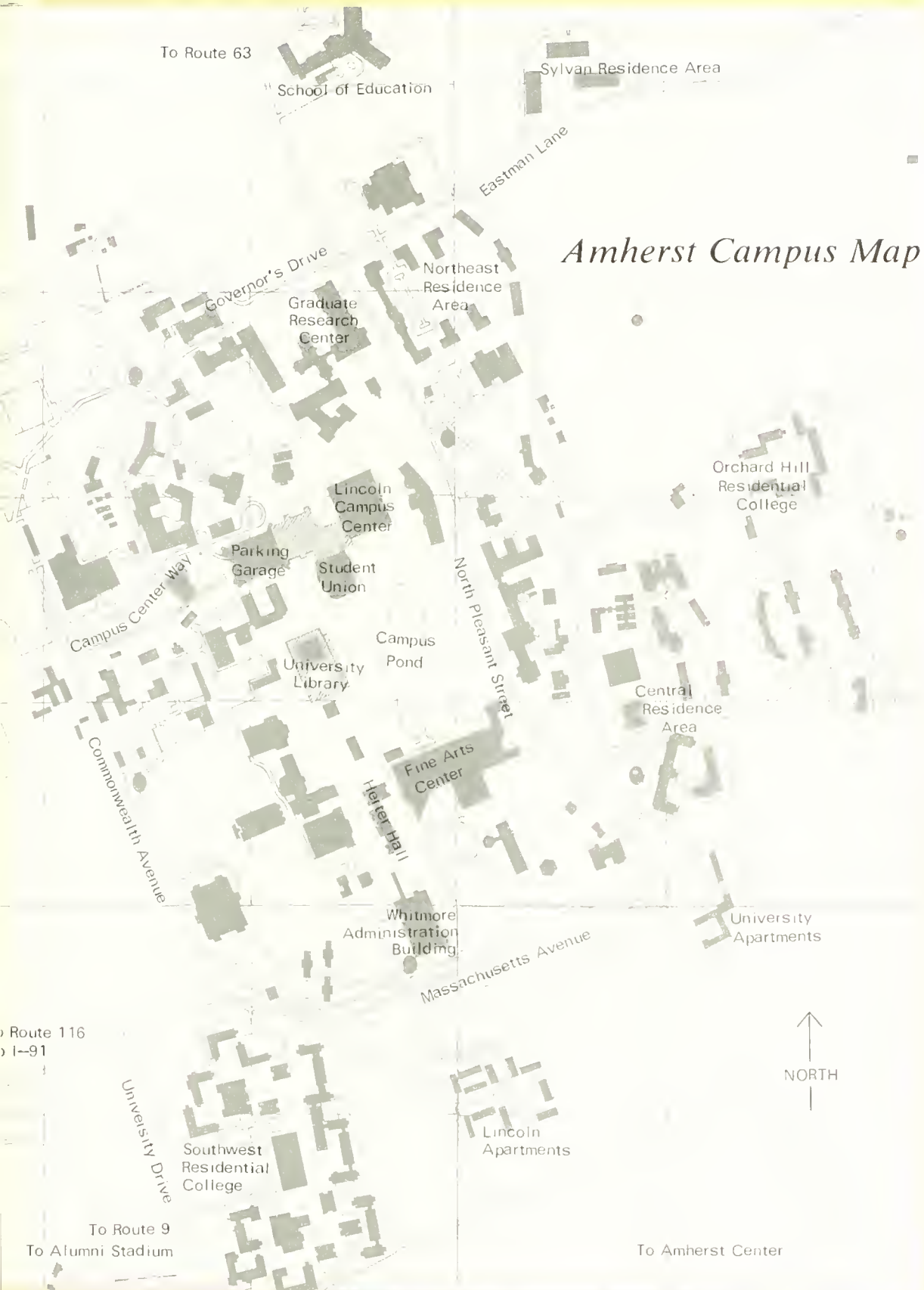


Southwest  
Residential  
College



Fine Arts Center





## *The Board of Trustees*

### *Organization of 1976*

ROBERT M. ABRAMS *of Holyoke*  
STEPHEN E. BREYER *of Cambridge*  
SYLVIA K. BURACK *of Brookline*  
BRUCE R. CARLSON *of Dallas, Texas*  
CATHERINE FORBES CLARK *of Dorchester*  
EDMUND J. CROCE *of Worcester*  
PAUL M. CRONIN *of Roslindale*  
DANIEL DENNIS *of Billerica*  
ROBERT D. GORDON *of Boston*  
JOSEPH P. HEALEY *of Arlington*  
OGRETTA V. MCNEIL *of Worcester*  
RUTH S. MORGENTHAU *of Cambridge*  
GAVIN D. ROBERTSON *of Worcester*  
CARY E. ROTHENBURGER III *of Concord*  
CAROLYN C. ROWLAND *of Osterville*  
ALAN SHALER *of Easthampton*  
ERLINE SHEARER *of Boston*  
ROBERT J. SPILLER *of Winchester*  
FREDERICK S. TROY *of Boston*

### *Ex Officio*

MICHAEL S. DUKAKIS *of Brookline, Governor of the Commonwealth*  
ROBERT WOOD *of Lincoln, President of the University*  
GREGORY R. ANRIG *of Needham, Commissioner of Education*  
JONATHAN E. FIELDING *of Brookline, Commissioner of Public Health*  
ROBERT L. OKIN *of Cambridge, Commissioner of Mental Health*  
FREDERIC WINTHROP, Jr., *of Ipswich, Commissioner of Agriculture*  
NANCY B. EDDY *of Amherst, Chairman, Board of Selectmen*

### *Officers of the Board*

JOSEPH P. HEALEY *of Arlington, Chairman*  
GLADYS KEITH HARDY *of Newton, Secretary*  
KENNETH W. JOHNSON *of Amherst, Treasurer*  
DOROTHY K. EICHEL *of Boston, Assistant Secretary*

# Administrative Officers

ROBERT WOOD, PH.D.  
*President*

ERNEST A. LYNTON, PH.D.  
*Senior Vice President for Academic Affairs*

JAY JANIS, B.A.  
*Senior Vice President for Management and Business Affairs*

NAN S. ROBINSON, M.A.  
*Vice President for Planning*

KENNETH W. JOHNSON, B.S.  
*Treasurer*

GLADYS KEITH HARDY, B.A.  
*Secretary of the University*

**Graduate School**

VERE C. CHAPPELL, PH.D.  
*Acting Associate Provost and Dean of the Graduate School*

EUGENE B. PIEDMONT, PH.D.  
*Associate Dean of the Graduate School for Academic Affairs*

MICHAEL N. KREISLER, PH.D.  
*Associate Dean of the Graduate School for Research*

ROBERT L. CHEW, ED.D.  
*Special Assistant to the Graduate Dean*

ROBERT M. SWASEY, B.A.  
*Graduate Registrar*

ROBERT E. STANEY, M.B.A.  
*Business Manager of the Graduate School*

**University of Massachusetts/Amherst**

RANDOLPH W. BROMERY, PH.D.  
*Chancellor*

DEAN ALFANGE, JR., PH.D.  
*Acting Vice-Chancellor for Academic Affairs and Provost*

DAVID C. BISCHOFF, PH.D.  
*Associate Provost and Dean of the School of Physical Education*

ROBERT L. WOODBURY, PH.D.  
*Associate Provost for Special Programs*

ROBERT W. GAGE, M.D.  
*Vice-Chancellor for Student Affairs*

GLEN GORDON, PH.D.  
*Acting Dean of the Faculty of Social and Behavioral Sciences*

LOUIS FISCHER, PH.D.  
*Acting Dean of the School of Education*

JEREMIAH M. ALLEN, PH.D.  
*Dean of the Faculty of Humanities and Fine Arts*

WILLIAM A. DARITY, PH.D.  
*Dean of the School of Health Sciences*

SEYMOUR SHAPIRO, PH.D.  
*Dean of the Faculty of Natural Sciences and Mathematics*

KENNETH G. PICHA, PH.D.  
*Dean of the School of Engineering*

GEORGE ODIORNE, PH.D.  
*Dean of the School of Business Administration*

ROSS S. WHALEY, PH.D.  
*Dean of the College of Food and Natural Resources*

**University of Massachusetts/Boston**

CARLO L. GOLINO, PH.D.  
*Chancellor*

**University of Massachusetts/Worcester**

ROGER J. BULGER, M.D.  
*Chancellor and Dean of the Medical School*



## General Information

### The University

The University of Massachusetts is the state university of the Commonwealth. It was founded in 1863 under the provisions of the Morrill Land Grant Act passed by the United States Congress one year earlier.

Situated in one of the most picturesque sections of the state, the University at Amherst joins with its academic neighbors — Amherst, Smith, Mount Holyoke, and Hampshire Colleges — in maintaining the rich tradition of education and cultural activity associated with the Connecticut Valley region. The University's Amherst campus consists of approximately 1,100 acres of land and 110 buildings. Physical growth has been carefully planned, with provisions for additional buildings and facilities to accommodate an enrollment of approximately 25,000 students.

The Associate Provost and Dean of the Graduate School, in collaboration with the University Graduate Council, exercises overall review and supervision of graduate programs conducted in the several colleges and provides guidance in the development of new programs as well as the maintenance of standards for existing programs. Each college of the University has developed its graduate programs in accordance with the highest national professional standards of the respective fields.

For information about University of Massachusetts at Boston graduate programs, consult the *University of Massachusetts at Boston Bulletin*.

Information on graduate programs in medicine is found in the *University of Massachusetts at Worcester Medical School Catalogue*.

#### COLLEGES CONDUCTING GRADUATE PROGRAMS

Seven colleges and schools of the University are authorized to offer graduate degree programs through the Graduate School: the College of Arts and Sciences, the College of Food and Natural

Resources, the School of Business Administration, the School of Education, the School of Engineering, the School of Health Sciences, and the School of Physical Education.

#### UNIVERSITY LIBRARY

The University Library system is composed of the new 28-story University Library and several branch libraries. Present holdings include over 1,400,000 books, periodical volumes, and government documents, and over 420,000 microforms. Holdings of the University Library and its branches are listed in the public catalog, situated on the main level of the University Library. More than 10,000 periodicals are currently received and distributed, according to subject matter, in the University Library or its branch libraries. Holdings and locations are listed in both the card catalog and the *Pioneer Valley Union List of Journal and Serial Holdings*, a computer-produced book that also includes serial listings of Amherst, Hampshire, Mount Holyoke and Smith College Libraries, Forbes Public Library and the Hampshire Inter-Library Center. A computer project to provide on-line access to all University serial holdings is currently in progress. The Library is a depository for U.S. government publications and also regularly receives many categories of publications from the United Nations and other international agencies and from the Commonwealth, cities, and towns of Massachusetts.

The University Library contains the major portion of the entire collection, including most of the holdings in the social sciences and humanities. The principal branch libraries are the Morrill Biological Sciences Library in the Morrill Science Center and the Physical Sciences Library in the Graduate Research Center.

A library handbook and information series is available at the reference desk of the University Library as well as in the branch libraries. Librari-

## UNIVERSITY OF MASSACHUSETTS

ans are on duty in the University Library and the two branch libraries to assist the University community in using the Library and its collections.

### HAMPSHIRE INTER-LIBRARY CENTER

The University Library is a participating member of the Hampshire Inter-Library Center, a cooperative facility for the acquisition, storage, and servicing of research materials, especially journals, documents, and scholarly sets. Incorporated in 1951 to augment library resources in the area, HILC is jointly operated by the libraries of the five Connecticut Valley colleges — Amherst, Hampshire, Mount Holyoke, Smith, and the University of Massachusetts — and the Forbes Library of Northampton, Massachusetts. The HILC collection numbers about 35,000 bound volumes, and approximately 1,000 journals are received currently. The Center is presently located in the Physical Sciences Branch Library.

### THE UNIVERSITY COMPUTING CENTER

The University Computing Center provides the computing services required to support the instruction and research activities of the faculty and students of the University. Computing services include batch, remote batch and time sharing operations. A large number of popular programming languages and an extensive library are available to the community. The time sharing system allows access to the computer from over 150 terminals located around the campus. As many as 90 simultaneous users can be accommodated. Programming languages that are available are FORTRAN, COBOL, BASIC, COMPASS, APL, SNOBOL, LISP and other special purpose languages. In addition to this, other program packages are available such as SPSS, BMDs, IMSL, SSP, Univac, MATH/STAT, etc. Users can also maintain and share their own private libraries.

In addition to the computing services, the University Computing Center offers many services including applications programming, consulting, program assistance and keypunching. Short courses in programming and various languages and the use of the various systems are offered as needed by the community. Formal full-term courses in computing techniques are offered by the Computer and Information Science Department.

The equipment of the University Computing Center consists of a Control Data Corporation

CDC Cyber 74-18 which has one CPU, 10 PPU's and 131K words of memory. Peripheral devices include disk drives, seven-track and nine-track tape drives, card readers, printers, card punch and two TEMPO-1 computers used as communications processors. Remote terminals include Teletypes and APL compatible terminals. Off-line equipment includes a plotter, keypunches, collator, reproducer, sorter and accounting machines.

### WATER RESOURCES RESEARCH CENTER

The Water Resources Research Center at the University's Amherst campus supports research in the planning and development of water and related land resources including water supply, water quality, flood control and hydropower. Areas covered include engineering, economics and hydrogeology; management and decision-making institutions; and the ecology of wetlands, rivers, lakes, and coastal waters. Through its research the Center also provides training opportunities for persons interested in master's and doctoral degrees in water resources-related fields. The Center assists the various departments in the development of new and strengthened water resources programs and courses. The Center organizes and sponsors short courses and seminars on water-related subjects of special interest.

### LABOR RELATIONS AND RESEARCH CENTER

The Labor Relations and Research Center conducts research in the field of labor relations, provides consultation services, and supports a regular program of academic course work. A Master of Science degree in Labor Studies is described elsewhere in this *Bulletin*. Inquiries should be addressed to the Director of Labor Relations and Research Center, 125 Draper Hall, University of Massachusetts, Amherst, MA 01002.

### THE MARINE STATION

The Marine Station of the University of Massachusetts is located about half way between Rockport and Gloucester on the North Shore of Cape Ann. The main laboratory building is on the end of a peninsula jutting out into Ipswich Bay. The Station is equipped essentially for marine studies, containing cultural facilities, darkrooms, instru-

ment rooms, running seawater, research offices, and a library. Further information is available from the Dean of the Graduate School.

#### THE SUBURBAN EXPERIMENT STATION

A part of the College of Food and Natural Resources, the University's Suburban Experiment Station is located in Waltham, about 10 miles west of Boston. It has 30 acres of land available for field experiments under urban/suburban conditions. Well-equipped greenhouses and laboratories for studying the effects of environmental stresses on plants are also available. Represented disciplines include plant physiology, plant pathology, entomology, plant breeding and plant genetics.

Faculty members regularly participate in graduate programs and are willing to cooperate in studies involving urban/suburban stresses.

#### DEPARTMENTS OF MILITARY AND AIR SCIENCE

Seniors and graduate students with two years of academic study remaining who are interested in becoming commissioned officers in the United States Army or United States Air Force may apply to the Department of Military Science or to the Department of Air Science, respectively, for a two-year commissioning program. Selected students receive \$100 per month and are granted Selective Service deferments. Two-year scholarships are available for qualified applicants. Those interested should consult the head of either department at least six months prior to the beginning of their final two years at the University. Early application is necessary for administrative processing. Candidates must pass an aptitude test, a physical examination, and attend a six-week summer camp.

#### UNIVERSITY OF MASSACHUSETTS ABROAD

##### FREIBURG PROGRAM

The Freiburg Program, begun in 1966-67, offers to graduate students and selected upper-division undergraduates an opportunity for a year of advanced studies in the humanities, social sciences, and arts at the University of Freiburg, Germany. Although a good command of German

is necessary for admission, the program is not restricted to students concentrating in German language and literature. However, a superior academic record is required for admission. Accepted students may enroll in a wide variety of courses at the University of Freiburg, including political science, comparative literature, philosophy, economics, music, psychology, and German language and literature.

The program is directed in Freiburg by a member of the University of Massachusetts faculty and is headquartered in the University of Massachusetts Study Center in Freiburg. The relationship between the two universities is developing into a genuine partnership, with yearly exchange of students and faculty from each institution.

Students from other colleges and universities applying to study in the Freiburg Program at the graduate level must apply to the Graduate School of the University of Massachusetts, as well as to the Office of International Programs, Whitmore Administration Building.

Basic cost of the program is estimated at \$2,000 - \$2,500 annually, including room and board, tuition and fees, but excluding international travel. Scholarships are available to outstanding students, and Fulbright scholarships may be applied to participation in the Freiburg Program. Applications and additional information are available at the Office of International Programs.

##### SUMMER PROGRAM AT FREIBURG

The Department of Germanic Languages and Literatures sponsors a six-week summer program in West Berlin and Freiburg, Germany. Courses in elementary, intermediate, and advanced German are offered, and students may earn up to 6 University of Massachusetts credits. There is a two-week period for independent travel in Europe between the initial week in Berlin and the five weeks spent in Freiburg.

The course fee for the program is \$1025. This fee covers round-trip international travel, tuition, room and board, special excursions, and lectures which supplement the basic program.

Although primarily for undergraduates, the program is open to graduate students as well. One of its aims is to offer to students enrolling in the one-year Freiburg Program the opportunity to gain greater proficiency in German prior to participation in that program.

For further information contact the Department of Germanic Languages and Literatures, Herter Hall.



## UNIVERSITY OF MASSACHUSETTS

### SUMMER PROGRAM AT OXFORD

A special group of courses in English literature is regularly offered at Trinity College, Oxford, during July and part of August. The six-week session is part of the regular Summer Session of the University of Massachusetts and awards University of Massachusetts credit. Courses are taught by Oxford faculty, with the Bodleian Library available for extensive research. Graduate and undergraduate courses are offered, subject matter varying according to the availability of specialists at Oxford and the interests of students. Evening lectures by noted authorities supplement course offerings. Students from colleges and universities other than the University of Massachusetts are also eligible. Admission requirements include 15 hours of credit in literature and good academic standing. The overall cost to the student is \$1100. There is free travel time before and after the seminar. To apply, contact Dr. Ernest Hofer, Department of English, Bartlett Hall.

### FIELD COURSE IN CULTURAL ANTHROPOLOGY ST. VINCENT, WEST INDIES

The Anthropology Department offers an eight-week field course in cultural anthropology to graduate and selected undergraduate students in anthropology. The purpose of the course is to give students a supervised introduction to cultural anthropological field work, the foundation of a professional career in anthropology.

The course is given in June and July. The first week is devoted to orientation and familiarization with the culture of St. Vincent in the capital, Kingstown. This is followed by six weeks' residence in research sites selected on the basis of both student and government interest. Research activities in the field are closely supervised by the director of the program, and students return to Kingstown periodically for brief seminars to compare and discuss their progress and problems. The final week's work, held in Kingstown, is devoted to presentation of preliminary results, evaluation, discussions with officials of Government, and planning for publication of final reports.

Costs of the program, including round-trip air transportation from New York, tuition, room and board, and program-related transportation, is about \$700 (\$850 for non-residents of Massachusetts). Limited financial aid is available. Students earn 6 University of Massachusetts credits. Fur-

ther information may be obtained from Professor T. M. Fraser, Department of Anthropology, Machmer Hall.

### FIELD PROGRAM IN ANTHROPOLOGY, EUROPE

The Anthropology Department offers a field program in anthropology open to graduate and advanced undergraduate students in anthropology. Lasting for a period of either four or seven months, the course is designed to provide serious students preparing for careers in anthropology with an extended period of field research in Europe under the guidance of an experienced field worker. The program is held each spring semester, with an option to extend the period of research through the summer available to selected participants.

Directorship of the program rotates among the faculty members of the Department's European Studies Committee. Location of the program in Europe in any given year depends upon who is directing the program. Each participant selects a field site in accordance with his interests and training, but within the country or group of countries designated by the director. The first few weeks in the field each student conducts a survey of the region in which his field is located before taking up residence at the site. Supervision of all field activities is provided by the director. All participants assemble periodically in a central location for short seminars, to discuss their problems and progress. A final seminar, during the last week of the program, is devoted to the presentation and evaluation of preliminary results.

Prerequisites for participation in the program include a working knowledge of the language required for field research, and prior course work in both field methods and in the culture area where research is to be conducted. Students interested in participation in the program should submit to the program director a proposal outlining the research they hope to accomplish. The proposal should be submitted during the fall preceding the spring in which the applicant wishes to participate in the program. A format for such a proposal, as well as additional information about the program, is available from the Chairman of the European Studies Committee, Anthropology Department, Machmer Hall.

A limited number of stipends is available to offset costs of international travel and maintenance while in the field.

## *Application Procedures for Admission and Readmission*

Holders of bachelors' degrees, from this University or from other institutions having substantially the same requirements for the bachelors' degree, are eligible to apply for admission to a program of graduate studies. Admission is only for the semester requested and cannot be guaranteed for a later date. An application may be obtained by writing to the Graduate Admissions Office, Graduate Research Center, University of Massachusetts, Amherst, MA 01002. Applications for admission, complete with supporting documentation, must be sent in duplicate to the Graduate Admissions Office so as to be received by March 1 for September or Summer Session enrollment and by October 1 for January enrollment.

Applicants can be admitted to the Graduate School in one of the following categories:

*Degree status:* students admitted as fully qualified to undertake a program toward a graduate degree.

*Provisional status:* students admitted on a provisional basis to a program. Students may enroll for a maximum of 12 credits or two consecutive enrollment periods (including Summer Session), whichever comes first. This status may not be renewed beyond the credit/time limitation regulation as stated above. At the conclusion of the Provisional status period students are either admitted to Degree status or terminated, depending upon the evaluation and recommendation by the graduate program and subject to the Graduate Dean's approval.

*Non-Degree status:* students who have a bachelors' degree and wish to take courses but do not intend to pursue a graduate degree are admitted on a limited basis for a period through the following Summer Session. Enrollment in any course is subject to the instructor's approval, and on a space-available basis. This status may be renewed upon completion of another application. Applications for this status do not require the supporting documentation specified below for Degree and Provisional status. Graduate credits earned under the Non-Degree status are normally not applicable toward a graduate degree at this University; however, up to six graduate credits may be applied toward a graduate degree if a student is later admitted to Degree status, and subject to the

recommendation by the graduate program and approval by the Dean of the Graduate School.

### REQUIREMENTS FOR ADMISSION

1. Payment of the required Application Fee (\$10, Massachusetts residents; \$25, non-residents).

2. A minimum undergraduate cumulative grade point average of 2.75 on a 4.0 grading scale.

3. A bachelor's degree or the equivalent from any college or university of recognized standing.

4. Two official transcripts of all previous college work (undergraduate and graduate). An applicant must request the registrar of all colleges previously attended to send two copies of the transcript directly to the Graduate Admissions Office. A final transcript showing that the bachelor's degree has been awarded must be received before the applicant can enroll in the Graduate School.

5. Two letters of recommendation from persons in the field of the applicant's academic major at the institution most recently attended. In some cases letters of recommendation from other persons may be more appropriate to the proposed field of study.

6. The Graduate Record Examination (GRE) Aptitude Test (required of all applicants, including foreign students). For a list of those graduate programs requiring a GRE Advanced Test refer to the Application Form. Only GRE scores taken within five years of the date of requested enrollment will be considered as fulfilling this requirement. Applicants must have transcripts of their GRE scores sent directly to the Graduate Admissions Office. Applicants for Fall admission are urged to take the GRE at the preceding November testing or earlier. The results of later testings are frequently not available before decisions on admission must be made. The Educational Testing Service, Box 955, Princeton, NJ 08540, administers the test in the United States as well as abroad. Addresses of test centers may be obtained from that organization. On this campus the test is given by the Student Development Center.

Applicants for admission to the School of Business Administration and the Department of Hotel, Restaurant, and Travel Administration are required to take the Graduate Management Admissions Test (GMAT) rather than the GRE. This test is also administered by the Educational Testing Service.

7. For foreign student requirements see section entitled *Foreign Applicants*.

8. Application procedures for the Five-College Cooperative Ph.D. Program are listed in the section entitled *Doctoral Degree Requirements*.

9. Finally, recommendation of admission by the graduate program applied for and formal acceptance by

## UNIVERSITY OF MASSACHUSETTS

the Dean of the Graduate School.

### FOREIGN APPLICANTS:

A brochure entitled "Information for Prospective Students from Other Countries" giving detailed information of use to foreign students, is available from the Graduate Admissions Office. Foreign applicants must complete their applications at least seven months prior to the registration date of the first semester of study.

The Test of English as a Foreign Language (TOEFL) is required of *all* applicants for admission to the Graduate School from countries whose native language is not English. Information about the examination may be obtained by writing:

Test of English as a Foreign Language  
Educational Testing Service  
Princeton, NJ 08540 U.S.A.

TOEFL may be waived if the applicant has attended an American college or university for a period of at least two academic years at the time the application is being considered. A score of 550 or above is *required* for admission. Students scoring between 500 and 549 who otherwise meet the requirements set by departments may be admitted provided they agree to attend, at their own expense in the summer prior to admission, a summer institute in English (such as the program of the Experiment in International Living at Putney, Vermont). All non-native-speakers of English who are admitted will be tested by the University on arrival before registration, whether or not they have submitted TOEFL. Students scoring below the established minimum will be *required* to take further work in English. The program of study of graduate students taking remedial English work is subject to limitation by the Graduate School.

Foreign applicants are normally admitted only to *Degree Status* and for *full-time study*.

*Admission of Faculty and Staff Members to Graduate Study:* A member of the faculty of the University with the rank of assistant professor or higher may not earn a graduate degree from the University; he or she may, however, do graduate work on a non-degree basis. A full-time staff member of the University may not carry more than seven credits per semester. Tuition for the first four credits and all general fees are waived.

*Readmission:* A student or applicant who falls into one of these categories must reapply:

1. An applicant who has previously been admitted to the University but did not enroll on the entrance date stated in the acceptance letter;

2. A graduate student at this University who was accepted for one degree program and wishes to apply for another program or degree; and

3. A degree candidate who has not continuously enrolled in courses or paid the Program Fee (see next section) must reapply and pay all associated fees.

## Tuition and Fees

### APPLICATION FEE

Residents of Massachusetts pay a \$10 Application Fee; non-residents pay a \$25 Application Fee.

### TUITION

All graduate students pay tuition at the following (Fall 1976) rates: Residents of Massachusetts — \$23.60 per credit hour up to \$236 per semester; non-residents — \$48.20 per credit hour up to \$482 per semester. Tuition rates will increase each semester on a graduated basis through Spring 1978, at which time Massachusetts residents will pay \$33.50 per credit hour up to \$335 per semester; non-residents will pay \$77.50 per credit hour up to \$775 per semester.

In order to register as a Massachusetts resident, a student must have on file a Certificate of Residence properly authenticated by a notary public.

Residents of other New England states may pay the in-state tuition rate under the *New England Regional Student Program*, but only if admitted to a degree program at this University that is not available at their home state university's graduate school. Inquiries should be directed to the Graduate Admissions Office.

### GENERAL FEES

(also see Medical-Surgical Section)

Graduate students enrolled for five or more credit hours are assessed approximately \$100 per semester.

This General Fee includes such facilities and services as Infirmary, Fine Arts, Campus Center, I.D. Card, and Graduate Student Senate Tax. The General Fee is **NOT** optional. Infirmary Service Fee is \$46. per semester.

Graduate students enrolled for fewer than five credit hours are assessed approximately \$30 per semester. This fee includes an I.D. card, Graduate Student Senate Tax, and one-half of the Campus Center charge.

The Summer Session tuition charges and fees are stated in the Summer Session Course Catalog.



### TUITION AND FEE CHANGE

Tuition and fees are subject to change and may be changed without prior notice.

### PROGRAM FEE

Graduate students not enrolled for any course credits but who are candidates for a degree, must pay a Program Fee of \$50 each semester until the degree for which the student has been accepted has been formally awarded. Deadline for payment of this fee is one week after the first day of classes. If a student does not pay this fee but later seeks readmission or applies for graduation, he shall pay the accumulated Program Fees plus a readmission fee of \$50. Students seeking readmission must file a written request, endorsed by the appropriate Department Head or Graduate Program Director, with the Graduate Dean.

### COMMENCEMENT FEE

There is a \$10 Commencement Fee requisite for graduation. This fee must be paid by the time a student files for graduation.

### MEDICAL-SURGICAL INSURANCE

An optional medical-surgical insurance plan supplements the care received by students at the Infirmary. It provides hospital, medical, and surgical care on a twelve-month basis for illness or injuries received during the academic year as well as holidays, summer vacation, and other times when the student is off campus. Students who register for the Fall Semester have only one opportunity to enter or reject this program each year, at the time of payment of the Fall Semester bill. It is offered on the Spring Semester bill for new spring registrants only. The fee for medical-surgical insurance is approximately \$53 per year. Married students desiring family coverage are advised to contact the Student Health Services. The cost of family coverage is an additional \$48.50 per quarter.

### STUDENT FINANCES

Students should arrive on campus with enough cash on hand to pay their tuition, fees, and insurance bills as well as room and board for at least one month after registration. Normally, this will be approximately \$500. (Students receiving financial assistance from or through the University will not receive their first checks for approximately two to three weeks after registration.)

### WAIVER OF TUITION

#### *Graduate Assistants and Fellowship Recipients*

Tuition is waived for graduate teaching and research assistants and associates and for fellowship recipients, provided that the stipend is at least \$900 per semester.

#### *Full-Time Community College Faculty*

The Trustees of the University of Massachusetts have authorized waiver of tuition, *but not fees*, for faculty members of the Massachusetts Regional Community Colleges taking courses at the University of Massachusetts, providing the faculty members have been serving full-time before taking such courses and return to full-time teaching in their Community College after completion of course work. When a faculty member who is eligible for such a tuition waiver desires to take a course at the University, his Community College President should write a memorandum certifying that he is a full-time faculty member. Such waivers will apply for the period from September 1 to the following August 31. Such faculty members must be accepted for admission by the Graduate School prior to any registration.

#### *Full-time University Faculty and Staff Members*

See section entitled Admission of Faculty and Staff Members to Graduate Study.

#### *Foreign Students*

Tuition may be waived for a number of foreign students up to a maximum of 10 percent of the foreign students in degree programs.

#### *Vietnam Veterans*

Tuition may be waived for any Vietnam veteran, as defined in the General Laws, whose service was credited to the Commonwealth. Any veteran eligible for this waiver is advised to contact the Veterans' Office, Whitmore Administration Building for further information.

### TUITION AND FEE REFUNDS

A student who leaves the University for any reason before a semester is completed, except as specified below, will be granted a pro rata refund of tuition and fees. A student who makes an advance payment and then for any reason does not attend any part of the next semester or term at the University will be given full refund of tuition and fees. A student who is involuntarily called into military service before the completion of a semester will be given pro rata refund of tuition and fees provided he receives no academic credit for work done in that semester. If academic credit is

## UNIVERSITY OF MASSACHUSETTS

given, there will be no refund. A student who is suspended or expelled from the University for disciplinary reasons forfeits all rights to a refund.

Refunds are first applied to reimburse scholarships or loan funds (up to the full amount), and any remaining amount is refunded to the student.

### REFUND SCHEDULE

#### *Regular Term*

- a. Within the first two weeks from the beginning of semester or term — (Registration Day) — 80%
- b. During the third week — 60%
- c. During the fourth week — 40%
- d. During the fifth week — 20%
- e. After the fifth week — No refund

#### *Summer Session*

- a. During the first week — 60%
- b. During the second week — 20%
- c. After the second week — No refund

### ROOM RENT

The charge varies from \$350 to \$400 per semester, depending upon the residential area. The telephone charge, where applicable, is \$20 per semester and is not optional.

### ROOM RENT REFUNDS

Room rent refunds are granted on a pro rata basis which applies for the first five weeks of the semester only. No rent refunds are granted after five weeks.

### BOARD

The cost for each semester is \$405 for 19 meals per week, \$370 for 14 meals per week, or \$330 for 10 meals per week. Food service will be available weekends on an individual purchase basis. Students may purchase individual meals on a cash basis.

### BOARD REFUNDS

Authorized refunds will be made on a pro rata basis. A student who is suspended or expelled from the University for disciplinary reasons forfeits all rights to a refund.

## Housing

The University provides a limited amount of

housing on campus for married and single graduate students. Information relating to off-campus housing should be requested from the Housing Office, Room 235, Whitmore Administration Building.

At present, one of the residence halls in the Southwest Residential College is reserved for use by unmarried graduate students. Prince House is a four-story building containing three large social-lounge areas, a recreation room, a television room, vending machines, and a snack lounge. Student bedrooms are for double occupancy only. Terms of occupancy are indicated below:

1. Space in the building will be assigned on a full-semester basis only.

2. Both American and foreign single graduate students, male or female, are admitted to the limits of available space. Each individual assignment states the amount of board and room charged. The University reserves the right to alter fees whenever necessary.

3. Residence-hall rules and regulations require that occupants assume the responsibility for damage in and to their rooms; hot plates or any other equipment for preparing hot food are expressly prohibited.

4. No assignment will be made until the \$100 Room Security Deposit has been paid. This deposit is required of all students who live in University residence halls. It is not deductible from the semester bill and can be refunded only upon notification of withdrawal or of the student's plans to move off campus, *provided* such notification is given to the Housing Office no later than forty-five days prior to registration day of each semester.

5. Upon acceptance to the Graduate School, the entering student will receive housing information and an application form. While every effort is made to comply with requests, the University reserves the right to make room assignments in accord with existing vacancies. Early applications receive preference.

### APARTMENTS FOR MARRIED STUDENTS

The University owns and manages 395 unfurnished apartment units of various sizes at three convenient locations on or near campus. A waiting list is established for entrance into University-owned housing and is maintained according to the date of application. Apartments are allocated as follows: 75% married graduate students, 20% married undergraduates, and 5% for University

use. Information on assignment procedures, apartment descriptions, and application forms may be obtained from the Married Student Housing Office, Room 235, Whitmore Administration Building.

#### OFF-CAMPUS HOUSING

A listing of off-campus apartments, houses, and rooms is maintained at the Off-Campus Housing Office for use by any person connected with the University. Due to daily changes in these rental listings and the fact that all off-campus arrangements must be made directly by the parties involved, these listings cannot be secured except by a personal visit. Information concerning off-campus housing may be obtained from the Off-Campus Housing Office, Munson Hall.

### *Fellowships, Assistantships, and Teaching Associateships*

#### UNIVERSITY FELLOWSHIPS

A limited number of unrestricted University Fellowships are awarded to graduate students on a University-wide basis by competition. They are intended to encourage and assist superior students in pursuing graduate study and in completing the requirements for graduate degrees in the minimum possible time.

The stipend is \$3000 for the academic year, payable in 4 quarterly installments from September through May. Fellowships provide for waiver of tuition, but not fees, and are not renewable beyond the second year. A recipient of a University fellowship must enroll as a full-time student.

Application can be made on forms supplied as part of the regular admissions material by the Graduate School of the University of Massachusetts. Completed applications must be submitted to the Graduate School for major department review before February 1 for the following September. Awards are announced by April 15. Applicants not currently enrolled in graduate study at the University must also have filed an application for admission to the Graduate School.

#### FEDERAL FELLOWSHIPS

The University participates in the various Federal fellowship programs sponsored by the National

Defense Education Act (NDEA), the National Science Foundation, and the National Institutes of Health. Suitable applicants are recommended by the academic departments.

#### OTHER FELLOWSHIPS

Direct fellowship awards are available from a number of foundations. Students may obtain information concerning these fellowships from the Graduate School.

#### GRADUATE ASSISTANTSHIPS AND ASSOCIATESHIPS

The University offers a number of graduate assistantships and associateships in the research and instructional programs of the various departments. Graduate assistants and associates are not required to pay tuition if their stipend is \$900 or more for the semester. A stipend of \$2400 or more over two semesters entitles the assistant to a waiver of tuition during the following Summer Session. Application for a graduate assistantship is made to the Graduate Program Director in the department involved.

#### RESEARCH ASSISTANTSHIPS

A number of research assistantships are available to qualified graduate students. These are made possible through funds provided by various industries, the Experiment Station, and research grants awarded to members of the Graduate Faculty either from sources outside the University or from funds provided by the University and administered by the Research Council. Stipends vary with the type of work and the amount of time involved, but are normally \$3600 per academic year for a 20-hour per week research assignment.

#### TEACHING ASSISTANTSHIPS

Many departments offer teaching assistantships to qualified regularly enrolled graduate students. A teaching assistant is normally required to devote 20 hours per week in preparation and teaching. The stipend is normally \$3600 per academic year.

#### TEACHING ASSOCIATESHIPS

Superior achievement and ability among a limited number of teaching assistants is recognized and rewarded by promotion to the position of Teaching Associate. The stipend for teaching associates is normally \$4000 per academic year.



UNIVERSITY OF MASSACHUSETTS

NATIONAL DIRECT LOANS AND  
THE COLLEGE WORK-STUDY PROGRAM

Graduate students may be eligible for National Direct Loans and employment under the College Work-Study Program. Loans are awarded on the basis of need and funds available; however, no student may borrow in excess of \$10,000. The repayment period and the interest do not begin until nine months after the student ends his studies. The loans bear interest at the rate of three percent per year, and repayment of principal may be extended over a ten-year period. If a borrower becomes a teacher in an elementary or secondary school or in an institution of higher education, as much as half of the loan may be forgiven at the rate of 10 percent of each year of teaching service.

Borrowers who elect to teach in certain eligible schools located in areas of primarily low-income families may qualify for cancellation of their entire obligation at the rate of 15 percent per year. Repayment may be deferred up to a total of three years while a borrower is serving in the Armed Forces, with the Peace Corps, or as a Volunteer in Service to America (VISTA). Repayment also is deferred for as long as a borrower is enrolled at an institution of higher education.

Information concerning these programs may be obtained from the Financial Aid Office, Whitmore Administration Building.

The deadline for filing an application is March 1. Applications received after this date may not receive consideration.

Programs Offered

MAJOR FIELDS IN WHICH COURSES ARE OFFERED LEADING TO THE DEGREE OF DOCTOR OF PHILOSOPHY:

|                                     |                                                |
|-------------------------------------|------------------------------------------------|
| Animal Science                      | French                                         |
| Anthropology                        | Geology                                        |
| Astronomy                           | Germanic Languages and Literatures             |
| Biochemistry                        | History                                        |
| Botany                              | Industrial Engineering and Operations Research |
| Business Administration             | Linguistics                                    |
| Chemical Engineering                | Mathematics and Statistics                     |
| Chemistry                           | Mechanical Engineering                         |
| Civil Engineering                   | Microbiology                                   |
| Communication Disorders             | Ocean Engineering                              |
| Communication Studies               | Philosophy                                     |
| Comparative Literature              | Physics                                        |
| Computer and Information Science    | Plant Pathology                                |
| Economics                           | Plant and Soil Science                         |
| Electrical and Computer Engineering | Political Science                              |
| English                             | Polymer Science and Engineering                |
| Entomology                          | Psychology                                     |
| Environmental Engineering           | Sociology                                      |
| Exercise Science                    | Spanish                                        |
| Food and Agricultural Engineering   | Sport Studies                                  |
| Food and Resource Economics         | Wildlife and Fisheries Biology                 |
| Food Science and Nutrition          | Zoology                                        |
| Forestry and Wood Technology        |                                                |

In several fields, degrees are awarded under the Five-College Cooperative Ph.D. Program: All departments in the biological sciences; Chemistry, French, Geology, Germanic Languages and Literatures, Philosophy, and Physics.

See *Education* section for concentrations of study leading to the degree of Doctor of Education.

## MAJOR FIELDS IN WHICH COURSES ARE OFFERED LEADING TO THE MASTER'S DEGREE:

|                                     |                                                |
|-------------------------------------|------------------------------------------------|
| Animal Science                      | Hotel, Restaurant and Travel Administration    |
| Anthropology                        | Industrial Engineering and Operations Research |
| Art                                 | Labor Studies                                  |
| Astronomy                           | Landscape Architecture                         |
| Biochemistry                        | Linguistics                                    |
| Botany                              | Manufacturing Engineering                      |
| Business Administration             | Marine Sciences                                |
| Chemical Engineering                | Mathematics and Statistics                     |
| Chemistry                           | Mechanical Engineering                         |
| Civil Engineering                   | Microbiology                                   |
| Classics                            | Music                                          |
| Communication Disorders             | Nursing                                        |
| Communication Studies               | Ocean Engineering                              |
| Comparative Literature              | Philosophy                                     |
| Computer and Information Science    | Physics                                        |
| Economics                           | Plant and Soil Sciences                        |
| Education                           | Plant Pathology                                |
| Electrical and Computer Engineering | Political Science                              |
| English                             | Polymer Science and Engineering                |
| Entomology                          | Psychology                                     |
| Environmental Engineering           | Public Administration                          |
| Exercise Science                    | Public Health                                  |
| Food and Agricultural Engineering   | Regional Planning                              |
| Food and Resource Economics         | Slavic Languages and Literatures               |
| Food Science and Nutrition          | Sociology                                      |
| Forestry and Wood Technology        | Spanish                                        |
| French                              | Sport Studies                                  |
| Geology                             | Theater                                        |
| Germanic Languages and Literatures  | Wildlife and Fisheries Biology                 |
| History                             | Zoology                                        |
| Home Economics                      |                                                |

DIVISION OF  
CONTINUING EDUCATION

The Division of Continuing Education serves part-time students for whom traditional or formal programs of study are not feasible. Such students' needs are met through two basic channels: Academic Extension (graduate- and undergraduate-level credit programs) and Conference Services (a flexible noncredit schedule of conferences, institutes, workshops, and seminars). The Division's main offices are located in Hills House North.

Academic Extension includes the Evening Division and special programs for off-campus credit

courses. Programs include such offerings as Project SELF, a women's program that is expanding beyond the Pioneer Valley in an attempt to provide continuing education to a vital sector of the Commonwealth's population.

The Division, through its Conference Services, assists on- and off-campus groups to arrange institutes, short courses, and workshops to be held in the Campus Center or elsewhere on the Amherst campus or, if circumstances require, off campus as well. Arrangements include budgeting, publicity, housing, meals, meeting rooms, registration, transportation, audiovisual material, and bookkeeping.

## Doctoral Degree Requirements

All requirements for any advanced degrees to be awarded at a given degree-granting period (February, May, September) must be completed by the appropriate deadline. The completed Eligibility for Degree forms must be submitted to the Graduate School by the specified deadline so that all the candidate's credentials can be certified before the degree is actually awarded. Refer to the *Guidelines for Doctoral Degree Candidates* for further detailed guidance in the preparation and completion of a program of study.

### DOCTOR OF PHILOSOPHY AND DOCTOR OF EDUCATION

The departmental Graduate Program Director is responsible for the following, all within the guidelines of the Graduate School and the candidate's school/department graduate studies program:

- a. Approving the candidate's program of courses.
- b. Approving the procedure for satisfying the language requirements, if any.
- c. Arranging for the candidate's preliminary comprehensive examination.
- d. Reporting fulfillment of the above requirements to the Head/Chairman of the Department.

As soon as the student has passed his preliminary comprehensive examination, the Department Head/Chairman or Graduate Program Director of the candidate's major department\* shall recommend to the Dean of the Graduate School the names of at least three members of the Graduate Faculty to serve as a Dissertation Committee. At least two of the Graduate Faculty so nominated shall be from the candidate's major department.\* One member shall be appointed from outside the candidate's department.\* The outside member shall, without exception, be a voting member of the Dissertation Committee.

It shall be the responsibility of the Dissertation Committee to approve the dissertation project, to supervise its execution, and to arrange for the final examination of the student. All members of the Dissertation Committee must tentatively

approve the dissertation before the final oral examination is scheduled and agree that it is time for this examination to be held. Attendance at the final oral examination is open to all members of the candidate's major department and any member of the Graduate Faculty. However, only members of the Dissertation Committee may cast votes. A unanimous vote of the Dissertation Committee is required for the student to pass the final oral examination. If, at the final examination, two members of the Dissertation Committee cast negative votes, the candidate will be informed that he has not passed the examination. If there is but one negative vote, the degree will be held up pending action of the Graduate Council.

The doctoral degree is conferred upon graduate students who have met the following requirements:

1. Successful completion of all courses and projects specified by the advisor/guidance committee within the guidelines of the candidate's school/department graduate studies program.
2. Satisfactory completion of foreign language requirements under Graduate Council policy. (These requirements are listed in the departmental sections of this *Bulletin*.)
3. Passing a preliminary comprehensive examination conducted by the major department. If the student fails the comprehensive examination he may, at the discretion of the examining committee, be permitted a second and final examination.
4. Submission of an approved dissertation prospectus to the Graduate School at least seven months prior to the Final Oral Examination (defense of dissertation).
5. Preparation of a dissertation satisfactory to the Dissertation Committee and the Department Head/Chairman.
6. Passing a final (at least partly oral) examination conducted by the Dissertation Committee. This examination shall be primarily upon, but not necessarily limited to, the candidate's dissertation. This examination cannot be scheduled until all members of the Committee and the candidate's Department Chairman or Head (or his designee) have approved the dissertation.

7. A minimum of one academic year as a full-time graduate student in residence at the University. The residence year must consist of two consecutive semesters, either a fall-spring or a spring-fall sequence. In order to qualify for full-time status, a student must be enrolled for nine or more credits per semester, either in regular graduate courses or for Doctoral Dissertation credits (900)/or in some combination of both. To be in residence he must be physically present on the campus

\*Refers to administrative entity for which degree has been authorized (i.e., department, program, school, etc.).



for some part of each week during the semester (although he need not reside or be domiciled in the Amherst area); and he may not be employed on more than a one-half time basis during the semester, either within the University or outside it.

8. The Statute of Limitations (total time period in which to earn the Ph.D. or Ed.D.) is six calendar years from acceptance into the program, or four years if the student already has a master's degree in the same field. A part-time student may be granted an additional year upon petition to his or her graduate program director and approval by the Dean of the Graduate School.

#### FIVE-COLLEGE COOPERATIVE PH.D. PROGRAM

A cooperative Ph.D. program is offered by Amherst, Hampshire, Mount Holyoke, and Smith Colleges, and the University of Massachusetts. The degree is awarded by this University, but in exceptional cases much of the work leading to it may be taken at one or another of the participating institutions. Departments authorized to offer the cooperative Ph.D. degree are: all departments in the biological sciences, Chemistry, French, Geology, German, Philosophy, and Physics.

An applicant must apply for the Five-College Cooperative Ph.D. Program through the Graduate School of the University of Massachusetts. The applicant must then secure the approval of the appropriate academic department at the University. The application then will be forwarded to the appropriate Five-College institution for its evaluation. The letter of acceptance to the applicant is sent only by the Dean of the Graduate School of the University of Massachusetts, not by the other cooperating institution.

Registration for the Five-College Cooperative Ph.D. students is handled only through the Graduate School of the University of Massachusetts.

Degrees awarded in this program will be appropriately indicated on the diploma and the permanent record card.

All requirements for the Five-College Cooperative Ph.D. degree are similar to those for the Ph.D. degree at the University except for the residency requirement. Residence in this program will apply to the institution where the dissertation work is done.

The names of the Graduate Faculty at cooperating institutions are listed at the end of this *Bulletin*.

## Doctoral Dissertation

In addition to the other requirements of the Graduate School, a candidate for the degrees Doctor of Philosophy (Ph.D.) and Doctor of Education (Ed.D.) must complete an acceptable dissertation. The dissertation qualifies for acceptance when it satisfies the following criteria: 1) It should demonstrate the candidate's intellectual competence and maturity in the field of concentration; 2) It should make an original and valid contribution to human knowledge; 3) It should be an individual achievement and the product of independent research.

Although doctoral dissertations may result from a project involving collaboration of several scholars, the individual contribution of each doctoral candidate must be substantial, clearly identified, and separately presented. Length of the dissertation is governed by the nature of its subject matter.

The dissertation in its completed form will be judged largely upon the ability of the candidate to review and make critical use of relevant literature; to formulate a problem, plan a method of attack, and work systematically toward a solution; to summarize his material or data, and draw conclusions based thereon. Scholastic attainment in writing and presenting the results of the study will be crucial. The goal of the dissertation is to make a contribution to knowledge. It should be of publishable quality.

The following rules shall be adhered to in the preparation and presentation of a dissertation:

1. The professor responsible for the direction of the student's research shall be the Chairman of the student's Dissertation Committee. Only members of the Graduate Faculty may be appointed to this committee.

2. It is the responsibility of the Chairman of the Dissertation Committee to arrange a conference with other members of the Committee and the candidate to discuss the research problem before approving the dissertation prospectus.

3. A copy of the candidate's dissertation prospectus must be signed by each member of the Dissertation Committee to indicate that the prospectus has been approved and that a conference with the candidate has been held. The signed copy of the prospectus shall then be sent to the Dean of the Graduate School, via the candidate's Graduate Program Director.

4. The Dissertation Committee is responsible for preparation of an acceptable dissertation. The dissertation must have the unanimous approval of this Committee and the approval of the Department Head or Chair-

## UNIVERSITY OF MASSACHUSETTS

man before arrangements are made for the final examination for the degree.

5. Because of the time required to give adequate consideration to the research, it is important that the dissertation be submitted to the Dissertation Committee not later than one month before the Graduate School degree granting deadlines.

6. Although different disciplines have distinctive research and presentation styles, the following recommendations should help achieve maximum uniformity:

a. The MLA Style Sheet (revised edition) is the recommended standard. However, any school, college, or department may specify substitute standards agreed upon in that discipline.

b. All typed copies of theses or dissertations must be on plain, white, quality rag paper, not less than 20-pound weight and 8½ x 11" in size. This paper is available at the University Store; no substitutions may be made. All copies should be of this same weight and quality paper. (This can be arranged by supplying your copy service with the correct paper in sufficient quantity.) Margins to the left shall be 1½ inches; margins to the right, one inch.

c. Any method of reproducing duplicate copies that produces the required number of clear, neat, and permanent copies is acceptable.

d. The form of doctoral dissertations must conform to the "Instructions for Typing Theses and Dissertations" which may be found in the *Guidelines for Doctoral Degree Candidates*.

e. Since the Graduate School has every dissertation microfilmed, much attention must be paid to the finished form. Both the Dissertation Committee and the Graduate School must approve the final format and appearance.

The candidate shall submit to the Graduate School the *original* (or copy of comparable quality, subject to approval *before* presentation of completed copy by the Graduate Dean), and one copy of the dissertation. Both the original (after being microfilmed) and the copy will be sent to the Library for binding. The candidate shall submit a money order or a certified bank check of \$8 made out to the Library Binding Trust Fund to cover binding costs. The original will be deposited in the central library as an archival copy. The copy will be located in either the central library or branch library, as appropriate, for circulation. Some departments require an additional bound copy for their own file. The candidate wishing to have other copies of his dissertation bound for departmental requirements or for his own purposes, is referred to the *Guidelines for Doctoral Degree*

*Candidates*. The candidate must also provide an abstract of fewer than 600 words.

The microfilm fee of \$40 covers microfilm publication of the dissertation by University Microfilms Library Services and the publication of the abstract by them in Dissertation Abstracts.

The microfilm fee covers the cost of copyright in the author's name. If the author does not wish to have the dissertation copyrighted the microfilm fee is \$25. The dissertation will be cataloged in the Library of Congress and in the University of Massachusetts Library. Microfilm copies may be purchased from University Microfilms Library Services, Xerox Corporation, Ann Arbor, Michigan 48106. Publication by microfilm does not preclude the printing of the dissertation in whole or in part in a journal or as a monograph.

## Master's Degree Requirements

In addition to the Master of Arts (M.A.) and Master of Science (M.S.) degrees, the University also offers the following master's degrees: \*Master of Arts in Teaching (M.A.T.), Master of Business Administration (M.B.A.), Master of Science in Business Administration (M.S.B.A.), Master of Education (M.Ed.), \*Master of Fine Arts (M.F.A.), Master of Landscape Architecture (M.L.A.), Master of Music (M.M.), Master of Regional Planning (M.R.P.), Master of Science in Chemical Engineering (M.S.Ch.E.), Master of Science in Civil Engineering (M.S.C.E.), Master of Science in Electrical and Computer Engineering (M.S.E.C.E.), Master of Science in Environmental Engineering (M.S.Envr.E.), Master of Science in Industrial Engineering and Operations Research (M.S.I.E.O.R.), Master of Science in Manufacturing Engineering (M.S.Manf.E.), Master of Science in Ocean Engineering (M.S.O.E.), Master of Science in Mechanical Engineering (M.S.M.E.), and Master of Public Administration (M.P.A.).

The basic requirements for the master's degrees are given below. Programs marked by asterisk above are described under headings below. Also consult the departmental sections for more detailed information. Refer to the *Guidelines for Master's Degree Candidates* for further detailed guidance in pursuing and completing a program of study.

1. A minimum of 30 graduate credits, of which

not more than six of grade B or better may be transferred from other institutions with the consent of the candidate's major department and approval by the Graduate Dean. Twenty-one of the 30 credits must be in the major field. If a thesis is offered, at least six credits must be earned in 700-900 series courses (at this University); if a thesis is not offered, at least 12 credits must be earned in 700-900 series courses (at this University). A minimum of half the required credits for a Master's degree in each department must be on a letter graded basis; some or all of the remaining number of credit hours toward the degree may be on a pass/fail basis, subject to the approval of the student's department. The option as to which courses may be taken on a pass/fail basis rests with the department/school rather than with the individual candidate. Transfer credits cannot be used as part of the required component of one-half credits of letter grades. No more than 10 credits may be earned by means of a thesis.

2. The Statute of Limitations (total time period in which to earn the Master's degree) is three calendar years from acceptance into the program, or (four years for the M.F.A. degree). A part-time student may be granted an additional year upon petition to his or her Graduate Program Director and approval by the Dean of the Graduate School.

3. The thesis is optional with the school or department; if one is required, however, it shall be under the supervision of a Thesis Committee. This Committee shall consist of one or more members of the Graduate Faculty appointed by the Dean of the Graduate School upon recommendation of the Head or Chairman of the Department. The thesis must be approved by the Thesis Committee and the Department Chairman or Head.

The candidate must also pass a general examination, not necessarily limited to the thesis topic, to be conducted by an examining committee of at least three members of the Graduate Faculty. The recommendation of two of the three members of the Examining Committee shall be requisite to receiving the degree. If the candidate prepares a thesis, Special Problems courses shall be limited to six credits.

4. Candidates for the Ph.D. degree may apply for the master's degree when they have fulfilled the residence and course requirements for the doctorate and the master's degree, have passed any applicable language examinations and have successfully completed the preliminary comprehensive examination for the Ph.D.

5. Foreign language requirements for the mas-

ter's degree are optional with the school or department.

6. Course credits used for fulfilling the requirements for a master's degree may not be used for fulfilling requirements for any other master's degree at this University.

#### MASTER OF ARTS IN TEACHING

This program is primarily for those who do not have adequate academic preparation nor appropriate teaching experience — but who do hold a bachelor's degree — to become effective teachers either at the secondary school or community/junior college level. The M.A.T. program leads to a terminal degree combining professional aspects of the M.Ed. degree with the academic tradition of the M.S./M.A. degree. Thirty-nine credits are required for the secondary school option, and 45 credits for the community/junior college option. A maximum of nine graduate credits of grade B or better from another accredited institution may be applied toward the degree, upon recommendation by one of the participating departments (Anthropology, Art, Botany, Chemistry, Classics, English, French, German, Physics, Public Health, and Sport Studies) and approval by the Graduate Dean.

#### MASTER OF FINE ARTS

The Master of Fine Arts degree program is particularly designed for those interested in the creative aspects of the arts and may be obtained in the Department of Art for work in the visual arts, the Department of English for work in creative writing, or the Department of Theater for work in dramatic art. The basic requirements for the degree are:

1. Sixty credits at the graduate level. Not more than 12 credits may be transferred from other institutions where the department considers it appropriate. While an interdisciplinary course of study may be arranged, the Art Department does not require that 12 credits be earned in courses outside the Art Department. No more than 18 credits may be earned for the thesis project.

2. The exact nature of the thesis project will be determined by the student's major adviser in conference with the student. It is to be understood that the student will produce a work in the creative arts. A written analysis of the work itself and of the procedures used in producing it will be required. The candidate will be asked to pass an



## UNIVERSITY OF MASSACHUSETTS

examination in the major field in addition to presenting the thesis project publicly. Applicants to the Department of Art (Studio) must submit a portfolio of slides directly to the Director of the Graduate Program.

### *Master's Thesis*

The requirements for the master's thesis are the same as those for the doctoral dissertation, listed above, with the following exceptions:

1. The Chairman or Head of the Department shall submit nominations to the Graduate Dean for a Thesis Committee. This Committee may consist of one, two, or three members, all of whom must be members of the University of Massachusetts Graduate Faculty. After the Thesis Committee has been appointed by the Graduate Dean, it shall review the candidate's proposed thesis outline. When accepted, all members shall sign a cover sheet indicating approval. The thesis outline, with the cover sheet bearing the signatures of the Committee members and the date of the Thesis Committee's meeting with the candidate, will be forwarded to the Graduate Dean by the Graduate Program Director at least four months prior to the general Master's examination (or defense of thesis).

2. The *original* (or copy of comparable quality, subject to approval *before* presentation of completed copy by the Graduate Dean) and one copy (both unbound) of the thesis are required. The candidate shall submit a money order or a certified bank check of \$8 made out to the Library Binding Trust Fund to cover binding costs. The original will be deposited in the central library as an archival copy; the copy will be placed in either the central library or branch library, as appropriate for circulation. Some departments require an additional copy of the thesis for their own files. Refer to the *Guidelines for Master's Degree Candidates* regarding having additional copies bound.

3. The thesis must be submitted along with the Eligibility for Degree form to the Graduate School by the deadline for the appropriate degree granting period.

### *Foreign Language Examinations*

Under Graduate Council policy, each academic program establishes foreign language requirements for its own advanced degree candidates. The program determines both the number of foreign languages and the level of competency required. A foreign language is defined for this requirement as a language other than the candidate's native tongue, in which there is a significant body of literature relevant to his or her academic discipline.

The levels of competency which a department may select are:

1. Advanced level.
2. Intermediate level.
3. Journal level: reading knowledge sufficient to understand journals in the language of the student's academic disciplines.
4. No foreign language competency.

A department may select any of these levels or combination of them for as many languages as it wishes. When a department selects levels one or two, the student's competency is judged by the score on the Graduate School Foreign Language Examination: The passing grade for advanced and intermediate levels is specified by the Graduate Council. Current passing levels are 600 and 450 respectively. The results are recorded on the student's transcript. When a department selects level three, the student's competency is decided by a departmental committee, but not by the Thesis or Dissertation Committee, and no entry is made on the student's permanent record card.

### *General Regulations*

1. *Course numbering system at the University of Massachusetts:*

- 001-099 Noncredit courses, nonquality point courses, entrance deficiencies, etc.
- 100-199 Undergraduate credit only: lower division.
- 200-399 Undergraduate credit only: upper division.
- 400-499 Professional courses which presume a bachelor's degree, no graduate credit.
- 500-600 Graduate credit only: parallel to 200-399.
- 700-999 For graduate students only.

700 Special Problems.

800 Master's Thesis.

900 Doctoral Dissertation.

2. *"More Restrictive" program regulations:*

Any Graduate School regulation or procedure shall *not* preclude separate degree programs from developing specific regulations or procedures which are *more* restrictive or selective.

3. *Academic average for regular standing:*

A graduate student must maintain a 2.80 overall cumulative average in all graduate courses in the major field. A student with a cumulative grade point average in the major field falling below 2.80 may be placed on academic probation. If, at the end of the ensuing semester, the cumulative average remains below 2.80, the student is subject to academic dismissal upon the recommendation of the graduate program. Only the Graduate Dean has authority to terminate/dismiss a student.

4. *Satisfactory or reasonable progress:*

A student must make satisfactory or reasonable progress towards completion of a degree program within the Statute of Limitations for that degree. A student who is not making satisfactory or reasonable progress is subject to termination upon the recommendation of the graduate program to the Dean of the Graduate School.

5. *Academic average for graduate degrees:*

In the grades which a student is offering to satisfy degree requirements, a minimum standard for satisfactory work is a B average. No degree will be awarded to a student whose cumulative average for course work earned for the degree at the University of Massachusetts is below 3.0.

6. *Maximum credit load:*

A graduate student may register for up to 15 credits during the fall and spring semesters and nine credits during the Summer Session. Any student who wishes to register for more than the maximum credit load must secure written permission from the graduate program director in the major department and secure the Graduate Dean's approval.

7. *Full-time students register for nine credits or more per semester. Part-time students register for eight credits or less per semester. Ph.D. and Ed.D. candidates may be considered full-time students regardless of the number of dissertation credits for which they register, when the major department certifies that they are working full-time on research.*

8. *Withdrawal regulations:*

a) To add, drop, or change a course, students must obtain the written approval of the instructor concerned and their faculty adviser. Signed cards

are to be filed with the Graduate Records Office.

b) Up to and including 10 academic days from the beginning of a semester a student may add, drop, or change courses without penalty; that is, no entry will be made on the student's permanent record. *No courses may be added after this date.* Signed cards are to be filed with the Graduate Records Office.

c) After period (b) but within six calendar weeks after the beginning of a semester a student may drop courses with a grade of DR (DRop) provided approval is obtained from the instructor and the student's major adviser.

d) During periods (b) and (c) a student may withdraw from the University without academic penalty. Grades of DR will be noted on the record. After six weeks, grades of WF (Withdraw Failing) or WP (Withdraw Passing) will be entered unless special permission is obtained from the Dean of the Graduate School. No student may withdraw from courses after final examinations begin.

9. *Incompletes:*

A student can obtain credit for an "incomplete" only by finishing the work of the course before the end of one calendar year from the time of enrollment in that course. At the end of that period, if a grade is not submitted, an IF (Incomplete Failure) will be recorded. The initiative in arranging for the removal of an "incomplete" rests with the student. This regulation does not apply to thesis and dissertation credits.

10. *Thesis and dissertation credits* (Thesis 800 and Dissertation 900): The required number of thesis and dissertation credits varies by program. They range up to a maximum of 10 for masters' theses and from 10 to 27 for doctoral dissertations. No student is exempt from this requirement; normal tuition rates will apply. These credits will remain "incomplete" until the thesis or dissertation has been accepted by the Graduate School at which time these credits will be converted to SAT (satisfactory).

11. *Five-college library use:*

The libraries at Amherst, Smith, Hampshire and Mount Holyoke Colleges are normally available to students from the University of Massachusetts, subject to the rules and procedures set by each library.

TRANSFER OF COURSES AND CREDITS  
TAKEN OVER AND ABOVE CREDITS  
EARNED FOR A BACHELOR'S DEGREE

An undergraduate student in the senior year at

## UNIVERSITY OF MASSACHUSETTS

any of the five-college institutions who will earn during this year more credits than needed for the bachelor's degree, may register concurrently for graduate credits at the University of Massachusetts after securing the permission of the major adviser and of the graduate course instructor. The student registers for these credits with the undergraduate registrar. The Graduate School will accept a maximum of six credits earned via this method. After completing the courses, if the student wishes to transfer them to a graduate program, the registrar should be requested to send to the Graduate School an official statement listing the courses, credits, and grades, and certifying that they were over and above those needed by the student for the bachelor's degree. The Graduate School will then record this information on a permanent record card and supply the student with transcripts bearing this legend:

"Approval given (date) to transfer the following course(s) and credits, earned over and above credits required for the bachelor's degree, toward the master's degree."

Transferring such credits does not comprise or guarantee admission to any program of the Graduate School; the normal admission procedure must still be followed.

## *Special Services Available to Graduate Students*

### GRADUATE COURSES DURING THE SUMMER

The University offers opportunity to pursue graduate studies during the summer. Details regarding courses offered, facilities for study, tuition and fees, etc., may be found in the Summer Session Bulletin, a copy of which may be obtained from the Graduate Admissions Office, Graduate Research Center, around April 15.

### HEALTH SERVICES

All students who have paid the Health Fee are eligible to receive care through the University Health Services. The provision of direct personal services to students is financed entirely by the student Health Fee. Therefore, any professional services rendered on campus by a member of the Health Services' staff is provided without addi-

tional charge. Off-campus hospitalization and surgical services can be arranged by the Health Services' staff, but the cost of this care is the responsibility of the individual student. A supplemental insurance program is available to students on an optional basis to provide coverage for most medical and surgical services not available at the Health Center. This plan also provides coverage for dependents of students. Services available at the Health Center include unlimited outpatient consultation with staff physicians and nurse practitioners backed by supporting diagnostic x-ray, laboratory, pharmacy, and physical therapy facilities. In addition, the Health Center contains 65 beds for the care of students who require hospitalization.

The outpatient clinic hours are weekdays, 8:00 a.m.-12 noon and 1:00-5:00 p.m., and for urgent problems only, Saturdays, 8:00-11:30 a.m. Appointments made with the physician of choice are encouraged, but care may be obtained on a walk-in basis. Emergency care is available 24-hours-a-day, seven days a week. Student visitors are allowed during specific hours; parents may visit at any reasonable hour.

The Mental Health Division is available to assist students with specific emotional problems and includes diagnostic and short-term treatment services. Appointments may be made by calling the Mental Health Division. In addition to direct-care services, the health program includes an active Health Education Division which attempts to involve students in programs that develop awareness of personal and community health needs. The Health Services is also concerned with matters of environmental health and safety that affect students, faculty, employees, and visitors on campus.

Each graduate student who has paid the Health Fee must fill out and submit a pre-entrance medical history and health evaluation form prior to registration. Information contained on this form will in no way affect the student's admission to the Graduate School. Students who have been under medical care prior to admission are encouraged to have their physician contact the Health Services and provide detailed reports and instructions.

All health-service program records are strictly *confidential*. No information will be released without the express written permission of the student. Students with questions concerning their health are encouraged to speak with a member of the staff.



### TEACHING IMPROVEMENT SERVICES

The Center for Instructional Resources and Improvement provides these coordinated services on the Amherst campus. Course evaluation services include questionnaire design and processing, computer display and data interpretation assistance. Teaching improvement strategies are matched to evaluation results. A wide array of teaching improvement support services are available, including videotaping, microteaching, skills training and others. Evaluation and improvement services are available to Teaching Assistants and faculty on an individual or departmental basis.

### CAREER PLANNING & PLACEMENT SERVICE

Vocational counseling with assistance in finding employment through career and occupational information, on-campus interviews, the preparation of credentials, personal resumes and recommendations is offered to aid graduate students to attain their career objectives.

### POST-DOCTORAL FELLOWS, RESEARCH ASSOCIATES AND VISITING FELLOWS

Post-Doctoral Fellows and Research Associates will be entitled to faculty privileges for the duration of their appointments at the University. Qualified scholars who desire temporarily the

privileges of the library and research facilities of the University, and who are not candidates for a degree may be appointed as Visiting Fellows (without stipend) upon petition to the Dean of the Graduate School. Such Fellows may be entitled to faculty privileges. However, use of research facilities will have to be arranged on an individual basis with the chairman or head of the department in whose area the facilities are located.

### GRADUATE STUDENT SENATE

The Graduate Student Senate serves as the representative body of graduate students at the University. It pursues policies and objectives that serve to advance the material and academic needs of the graduate community.

### NON-DISCRIMINATION POLICY

The University of Massachusetts at Amherst prohibits discrimination on the basis of race, color, sex, age, religion, national origin or handicap in any aspect of its employment, in the recruitment, admission and treatment of students and in its policies and programs, as required by Federal and State laws and regulations. Inquiries concerning these laws and regulations or their application should be addressed to the Office of the Affirmative Action Coordinator, Chancellor's Office 375 Whitmore Administration Building.

# Description of Graduate Programs

Before consulting the course descriptions listed in this section, students should become thoroughly familiar with the General Regulations governing registration for courses in the Graduate School. The regulations cover such matters as graduate credit, course numbering system, changing or dropping of courses, and requirements regarding incomplete work in a course. Students should also acquaint themselves with the requirements governing the particular degree which they wish to earn.

For description of courses numbered from 100 to 399, refer to the current Undergraduate Course and Faculty Directory of the University.

## Animal Science

### GRADUATE FACULTY

THOMAS W. FOX, *Professor and Head of the Department of Veterinary and Animal Sciences*, B.S., Massachusetts, 1949; M.S., 1950; Ph.D., Purdue, 1952.

J. ROBERT SMYTH, JR., *Professor and Graduate Program Director*, B.S., Maine, 1945; M.S., Purdue, 1947; Ph.D., 1949.

DONALD L. ANDERSON, *Professor*, B.S., Massachusetts, 1950; M.S., Connecticut, 1952; Ph.D., Cornell, 1955.

DONALD L. BLACK, *Professor*, B.S., Maine, 1954; M.S., Cornell, 1957; Ph.D., 1959.

WALLACE G. BLACK, *Professor*, B.S., Wisconsin, 1948; M.S., 1949; Ph.D., 1952.

ANTHONY BORTON, *Associate Professor*, A.B., Haverford, 1955; M.S., Michigan State, 1961; Ph.D., 1961.

RICHARD A. DAMON, JR., *Professor*, B.S., Massachusetts, 1947; M.S., Minnesota, 1949; Ph.D., 1951.

ROBERT T. DUBY, *Assistant Professor*, B.S., Massachusetts, 1962; M.S., 1965; Ph.D., 1967.

HEINRICH FENNER, *Associate Professor*, B.S., Agricultural College of Stuttgart-Hohenheim, 1951; Ph.D., 1956.

STANLEY N. GAUNT, *Professor*, B.S., Rutgers, 1938; Ph.D., North Carolina State, 1955.

GEORGE R. HOWE, *Associate Professor*, B.S., Vermont, 1957; M.S., Pennsylvania State, 1959; Ph.D., Massachusetts, 1961.

SIDNEY J. LYFORD, JR., *Associate Professor*, B.S., New Hampshire, 1958; M.S., North Carolina State, 1960; Ph.D., 1964.

JAMES B. MARCUM, *Assistant Professor*, B.S., Missouri, 1960; M.S., Cornell, 1961; M.Div., Midwestern Baptist Theological Seminary, 1965; Ph.D., Missouri, 1969.

MARTIN SEVOIAN, *Professor*, B.S., Massachusetts, 1949; V.M.D., Pennsylvania, 1953; M.S., Cornell, 1954.

RUSSELL E. SMITH, *Professor*, B.S., Massachusetts, 1938; V.M.D., Pennsylvania, 1912.

GLENN H. SNOEYENBOS, *Professor*, D.V.M., Michigan State, 1945.

OLGA M. WEINACK, *Associate Professor*, B.A., Mount Holyoke, 1946; M.S., Massachusetts, 1950.

The graduate program in the animal sciences includes studies in mammalian and avian biology, with options in (a) genetics, (b) physiology, (c) nutrition, and (d) animal diseases. Students planning to major in any one of these fields must have a strong background in biology and chemistry or mathematics, or must be prepared to remedy undergraduate deficiencies without graduate credit. The option in animal diseases is designed primarily for veterinarians but is open to others with appropriate academic training. Requirements for both the M.S. and Ph.D. degrees include courses in the animal sciences offered by the department and courses in supporting areas offered by such departments as Zoology, Chemistry, Biochemistry, Microbiology, and Statistics. Available research material includes a number of domestic species. The department requires no foreign language reading competency for the doctoral degree.

### COURSES OFFERED BY THE DEPARTMENT

(Note: 500 and 600 series courses are open to both graduate and undergraduate students; 700 and 800 series are open to graduate students only. Where prerequisites are stated, equivalent courses taken at other institutions or permission of instructor may be substituted.)

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### Genetics

#### 607. PRINCIPLES OF ANIMAL GENETICS.

The identification, transmission, expression and arrangement of the hereditary material. Emphasis on genetic principles affecting qualitatively inherited traits of animals. Permission of instructor required.

Mr. Smyth, Mr. Marcum.

#### 608. APPLIED ANIMAL GENETICS.

The mechanisms of heredity and variation in livestock and poultry; the role of selection and breeding systems in genetic improvement and their evaluation. Permission of instructor required.

Mr. Fox.

## ANTHROPOLOGY

### 704. AVIAN GENETICS.

The classical and physiological genetics of morphological traits of avian species. Emphasis on melanogenesis and characteristics involving epidermal structures.  
Permission of instructor required. Mr. Smyth.

### 705. GENETICS OF PRODUCTIVE TRAITS IN POULTRY.

Lectures and reports on the genetics of meat production and reproduction. Emphasis on the physiological genetics of fertility and embryogenesis.  
Permission of instructor required. Mr. Smyth.

### 706. QUANTITATIVE INHERITANCE AND SELECTION.

The principles of population genetics and quantitative inheritance as applied to selection for traits of economic importance in poultry; theoretical and practical considerations of breeding systems.  
Permission of instructor required. Mr. Fox.

### 707. ADVANCED ANIMAL GENETICS.

Modern research in animal breeding with emphasis on the statistical approach. Includes development of selection indexes for various farm animals, sire indexes, and breeding plans based on systems of mating.  
Prerequisite, An Sci 608. Mr. Gaunt.

## Physiology

### 520. ANIMAL PHYSIOLOGY.

An in-depth study of the different systemic organ systems of the body. Emphasis on their applied regulation in animals and man.  
*Credit, 4.* Mr. Howe.

### 521. PHYSIOLOGY OF HOMEOSTASIS.

Foundations for systemic organ physiology through the presentation of homeostatic circuits available to the living body, such as fluid, gaseous, neural, muscular, and specialized integrated mechanisms.  
Mr. Howe.

### 621. PHYSIOLOGY OF REPRODUCTION.

Comparative aspects of anatomy, embryology, endocrinology, and physiology of reproduction and lactation.  
*Credit, 4.* Mr. W. G. Black.

### 724. ADVANCED AVIAN PHYSIOLOGY.

Lectures and reports on specific problems in avian physiology.  
Permission of instructor required. Mr. Anderson, Mr. Smyth.

### 725. MAMMALIAN REPRODUCTION.

An advanced course in the comparative approach to reproductive anatomy and endocrinology. Lectures and reports with theoretical and practical consideration of current research in laboratory and domestic animals, and in primates.  
Mr. D. L. Black.

### 726. FERTILITY AND FECUNDITY.

The role of heredity, nutrition, pathology, and the environment in the determination of fertility and fecundity in mammals. Current research directed toward control of reproduction through experimental means is emphasized.  
Prerequisite, An Sci 621 or 725. Mr. W. G. Black.

## Nutrition

### 630. PRINCIPLES OF NUTRITION.

Emphasis on the basic biochemical and physiological concepts underlying the specific functions and interrelationships of the nutrients required for maintenance, production, and reproduction in both ruminants and nonruminants.  
Mr. Anderson.

## GRADUATE SCHOOL

### 734. ADVANCED AVIAN NUTRITION.

Lectures, reports, and discussions of significant research developments and theories in avian nutrition.  
Permission of instructor required. Mr. Anderson.

### 735. RUMINANT NUTRITION.

An advanced course in ruminant digestion and metabolism. Special topics selected and discussed in the light of recent and current research.  
Permission of instructor required. Mr. Fenner, Mr. Lyford.

## Animal Diseases

### 670. ANIMAL PATHOLOGY.

Introduction to the study of animal diseases; causes, development, transmission, and control. Lectures and demonstrations.  
Permission of instructor required. Mr. Smith.

### 771. DIAGNOSTIC LABORATORY TECHNIQUES.

Microbiological, histopathological, immunological, hematological techniques applicable to the diagnostic laboratory.  
*Credit, 2.*

### 772. MAMMALIAN DISEASES.

A survey of diseases of mammals, including laboratory animals. Emphasis on infectious diseases and their control. Lectures and demonstrations.  
Permission of instructor required. Mr. Harris.

### 773. AVIAN DISEASES.

A survey, with emphasis on infectious diseases and their control. Lectures and demonstrations.  
Permission of instructor required. Mr. Snoeyenbos.

### 774. HISTOPATHOLOGY.

Histological study of basic pathological processes.  
Permission of instructor required. Mr. Sevoian.

## Miscellaneous

### 661 (I). INTERMEDIATE BIOMETRY.

Design of experiments in the biological sciences. Methods of analysis of such designs, including expectations of mean squares, selection of appropriate error terms, individual and multiple comparisons, and trend analyses.  
Prerequisite, introductory course in biometrics or statistics.  
Mr. Damon.

### 662 (II). ADVANCED BIOMETRY.

Analysis of data with disproportionate subclass numbers, including the method of fitting constants, the method of weighted squares of means, absorption of equations, expectations of mean squares, and tests of hypotheses.  
Prerequisite, An Sci 661. Mr. Damon.

### 700. SPECIAL PROBLEMS.

A specific problem in some aspect of animal science not related to the candidate's thesis.  
*Credit, 3-6.*

### 751, 752. SEMINAR.

*Credit, 1 each semester.*

### 800. MASTER'S THESIS.

*Maximum credit, 10.*

### 900. DOCTORAL DISSERTATION.

*Credit, 18.*

## Anthropology

## GRADUATE FACULTY

DONALD A. PROULX, *Associate Professor and Chairman of the Department of Anthropology, B.S., Wisconsin at Milwaukee, 1961; Ph.D., California at Berkeley, 1965.*



## UNIVERSITY OF MASSACHUSETTS

H. MARTIN WOBST, *Assistant Professor and Graduate Program Director*, B.A., Michigan, 1966; M.A., 1968; Ph.D., 1971.

GEORGE J. ARMELAGOS, *Professor*, B.A., Michigan, 1958; M.A., Colorado, 1963; Ph.D., 1968.

JOHN W. COLE, *Associate Professor*, B.A., Michigan, 1957; M.A., 1963; Ph.D., 1969.

JOHNETTA B. COLE, *Professor*, B.A., Oberlin College at Ohio, 1957; M.A., Northwestern Univ., 1959; Ph.D., 1967.

DENA F. DINCAUZE, *Assistant Professor*, B.A., Barnard, 1956; Ph.D., Harvard, 1967.

RALPH H. FAULKINGHAM, *Associate Professor*, B.A., Wheaton College, 1965; M.A., Michigan State, 1969; Ph.D., 1970.

SYLVIA HELEN FORMAN, *Assistant Professor*, B.A., California at Berkeley, 1968; M.A., 1969; Ph.D., 1972.

DAVID H. FORTIER, *Associate Professor*, B.A., Columbia, 1949; M.A., 1953; Ph.D., 1964.

THOMAS M. FRASER, JR., *Professor*, A.B., Harvard, 1949; M.A., Columbia, 1958; Ph.D., 1963.

JOEL M. HALPERN, *Professor*, B.A., Michigan, 1950; Ph.D., Columbia, 1956.

ALFRED BACON HUDSON, *Associate Professor*, B.A., California at Berkeley, 1958; Ph.D., Cornell, 1967.

ORIOI PI-SUNYER, *Professor*, B.A., Mexico City College, 1954; M.A., Harvard, 1957; Ph.D., 1962.

ZDENEK SALZMANN, *Professor*, M.A., Indiana, 1949; Ph.D., 1963.

ALAN C. SWEDLUND, *Assistant Professor*, B.A., Colorado, 1966; Ph.D., 1970.

R. BROOKE THOMAS, *Associate Professor*, B.A., Pennsylvania State, 1963; Ph.D., 1972.

RICHARD B. WOODBURY, *Professor*, B.S., Harvard, 1939; M.A., 1942; Ph.D., 1949.

Students beginning graduate work in anthropology are expected to be conversant with the field as evidenced by successful undergraduate completion of introductory course work in at least three of the four subfields of anthropology, plus at least two advanced undergraduate courses, not both in the same subfield. Students admitted without this minimum of preparation may be expected to remove any deficiencies before being granted full graduate standing.

Students working toward the Master of Arts degree in Anthropology, in addition to fulfilling the general requirements of the Graduate School for the degree, must complete and be evaluated on a core program, normally comprising four to six specified courses, that has been worked out in consultation with the student's guidance committee. The core program is tailored to meet the student's particular needs, and is normally completed in the first two to three semesters of graduate work. Students who, at the completion of their core evaluation, are recommended as qualified to complete the M.A. degree, have two options, one requiring the writing of an M.A. thesis, the other not.

## ANTHROPOLOGY

A student working toward the Doctor of Philosophy degree in Anthropology will, under the guidance of his/her committee members, prepare statements of field in three areas of specialization that reflect the student's career goals and intellectual interests. One of the statements of field normally represents the student's dissertation prospectus. After the completion and approval of the three statements of field, the student takes an oral Ph.D. Preliminary Comprehensive Examination, normally at the end of the fourth or fifth semester of graduate work. Upon successful completion of this examination, the student concentrates on the research that will provide the basis for a required dissertation. Normally, all candidates are expected to engage in fieldwork.

There is no general foreign language or tool of research requirement for degree qualification in anthropology. However, where the candidate's guidance committee deems the acquisition of certain relevant skills as necessary for the effective pursuit of his or her research and professional objectives, the student may be expected to develop satisfactory levels of competence in the use of various research tools and/or languages.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

700. SPECIAL PROBLEMS IN ANTHROPOLOGY.  
Directed individual research or reading in anthropology.  
*Credit, 1-9*

701, 702. SEMINAR.  
Each semester, guest speakers present their research findings related to one or more of anthropology's four fields to graduate students and faculty.  
*Credit, 0.*

722. ARCHAEOLOGY OF THE SOUTHWEST.  
Examination of selected problems in methodology and interpretation of the prehistory of the American Southwest. May be repeated once for credit.  
*Mr. Woodbury.*

725. ANDEAN ARCHAEOLOGY.  
Selected problems in excavation, analysis, and interpretation of Andean prehistory. Emphasis on the later stages of development of native American civilizations.  
*Mr. Proulx.*

760. SEMINAR IN EUROPEAN ANTHROPOLOGY.  
Particular attention to problems resulting from students' field investigations in Europe.

765. PROBLEMS IN FAR EASTERN ANTHROPOLOGY.  
Detailed consideration of selected, important anthropological problems and controversies in dealing with cultural and anthropological data from the Far East. China is emphasized.  
*Mr. Fortier.*

767. SOUTHEAST ASIAN ANTHROPOLOGY.  
Selected problems in Southeast Asian anthropology, such as relations between hill and valley cultures, education, economic development, and minority group problems. Major attention to the mainland.  
*Mr. Fraser, Mr. Halpern.*

770. PROBLEMS IN NORTH AMERICAN ARCHAEOLOGY.  
Selected problems in North American archaeology, emphasizing the anthropological interpretation of prehistoric data.

## ANTHROPOLOGY

779. MAT TEACHING PRACTICUM SEMINAR.  
Intended to be taken in conjunction with an MAT in Anthropology student's teaching internship or practicum.  
*Credit, 9.*
800. MASTER'S THESIS. *Credit, 6-9.*
802. RESEARCH IN ARCHAEOLOGY.  
Directed individual research in archaeology. *Credit, 1-12.*
803. RESEARCH IN PHYSICAL ANTHROPOLOGY.  
Directed individual research in physical anthropology.  
*Credit, 1-12.*
804. RESEARCH IN CULTURAL ANTHROPOLOGY.  
Directed individual research in cultural anthropology.  
*Credit, 1-12.*
805. RESEARCH IN LINGUISTIC ANTHROPOLOGY.  
Directed individual research in linguistic anthropology.  
*Credit, 1-12.*
812. SEMINAR IN SOCIAL BIOLOGY.  
The interaction of the social, biological, and ecological factors involved in various aspects of human biological and cultural diversity. Mr. Workman.
836. INDIVIDUAL AND SOCIETY.  
A cross-cultural consideration of the relationship between the individual and his society with attention to theories, methods, and empirical findings as reported in the literature of the behavioral sciences.
837. THE HISTORY OF ANTHROPOLOGICAL THEORY.  
The origin and development of anthropological theory, cultural evolution, culture history, and cultural dynamics with a primary focus on trends in American anthropology up to mid-twentieth century. Mr. Fortier.
838. CONTEMPORARY ANTHROPOLOGICAL THEORY.  
A seminar analyzing selected problems in contemporary anthropological theory. Emphasis on the structural approaches of the British and French schools.
839. SEMINAR: COMPARATIVE SOCIAL SYSTEMS.  
Individual study and discussion of types of social systems in non-literate and peasant societies; consideration of relevant anthropological theory.
840. ANTHROPOLOGY AND DEVELOPMENT.  
Tribal and traditional economic systems and the process of economic technological change. Emphasis on current problems of modernizing nations. Mr. Pi-Sunyer.
- 841, 842. THEORY AND METHOD IN SOCIAL ANTHROPOLOGY.  
A two-semester sequence devoted to structural functional analysis as developed in British social anthropology. Emphasis on method in the analysis of social and political theoretical issues.  
*Credit, 6 (3 each).* Miss Munn, Mr. Faulkingham.
845. REVOLUTION AND SOCIAL CHANGE.  
Drastic social and cultural change. Emphasis on the historical background and social contexts of political revolutions and their role in modernizing nations. Mr. Halpern.
850. SEMINAR IN COMPARATIVE SYMBOL SYSTEMS.  
Current theory and analytic method in the symbolic analysis of socio-cultural systems. Miss. Munn.
860. LANGUAGE AND CULTURE.  
Linguistic prehistory and classification; methods and interpretations of comparative linguistic analysis; linguistic methodology and "ethnoscience" approaches; the "Whorf hypothesis" and linguistic relativity. Mr. Hudson

## GRADUATE SCHOOL

961. ANTHROPOLOGY OF COMMUNICATION.  
Various communicative codes, from a biological and socio-cultural viewpoint. Mr. Salzmann.
862. LINGUISTIC ANTHROPOLOGY: THE SOCIAL DIMENSION.  
A seminar examining the phenomena, methods of investigation, and interpretation of the social correlates of linguistic usage and variability. Mr. Hudson.
868. EUROPEAN PREHISTORY.  
Analysis of the prehistoric cultures of Europe to the end of the Iron Age. Cultural evolution, and long range trends in natural and cultural adaptation emphasized. Mr. Wobst.
875. METHODS IN ANTHROPOLOGICAL RESEARCH.  
Methods of studying cultures of homogeneous and heterogeneous societies among primitive and modern peoples; emphasis on the various techniques of field work.
880. PHYSICAL ANTHROPOLOGY: THE SKELETON.  
The human skeleton considered in its functional aspects and with reference to evolution, age, and sex. Methods of osteological investigation and osteometrics. Mr. Armelagos.
882. PHYSICAL ANTHROPOLOGY OF THE LIVING.  
Techniques and applications of physical anthropology among living persons. Anthropometry, somatotyping, serology, and other descriptive methods; elements of statistical analysis. Body form and function in relation to individual constitution and racial variation. Mr. Armelagos.
883. SEMINAR IN BIOLOGICAL ANTHROPOLOGY.  
Advanced treatment of topics such as anthropological genetics, behavior genetics, growth and development adaptation.
884. HUMAN ADAPTABILITY.  
Seminar dealing with the mechanisms of human adaptation to environmental stress; emphasis on human variation. Cultural as well as biological modes of adaptation. Prerequisite, Anthro 372 or permission of instructor.
900. DOCTORAL DISSERTATION. *Credit, 10.*
- ANTHROPOLOGY COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS.  
(For either major or minor credit)
504. THE ORIGINS OF ANCIENT CIVILIZATIONS.  
A critical analysis of the archaeological data and theories pertaining to the origins and rise of civilizations in the Old World and the New.
528. IMAGES OF THE U. S. INDIAN.  
Some of the ways in which U.S. Indians have been variously perceived by social scientists, officials, "do-gooders" and novelists, from the 18th to the 20th centuries. Miss Chandler.
536. ARCHAEOLOGY OF MESOAMERICA.  
The growth of civilization in Mexico and Central America from its earliest antecedents to the Spanish Conquest, based on archaeological research. Mr. Woodbury.
538. CULTURE AND SOCIETY IN MESOAMERICA.  
The Mesoamerican culture area from the Spanish Conquest to the present. The evolution of contemporary Mesoamerican cultures, and the nature of pluralism and sociocultural integration. Mr. Pi-Sunyer.
552. RURAL AND PEASANT SOCIETIES.  
Examined from the standpoint of their population and institutions, their emerging needs, and their relation to mass society.
555. PRE-INDUSTRIAL TECHNOLOGY.  
Analysis of selected aspects of the material culture of simpler societies, past and present, in relation to social and economic aspects of culture. Mr. Woodbury.

## UNIVERSITY OF MASSACHUSETTS

### 560. PEOPLES OF EUROPE: EASTERN EUROPE AND THE U.S.S.R.

A survey of the peoples and cultures of Eastern Europe from prehistoric times to the present, stressing the role of peasants and nomads with their changing ecological adaptations. Mr. Halpern.

### 563. URBAN ANTHROPOLOGY.

Using as a point of departure the current urban condition, the origins and evolution of cities are explored in a cross-cultural framework. Emphasis on rural-urban relationships and how these have changed over time. Mr. Halpern.

### 565. PEOPLES OF EUROPE: CENTRAL EUROPE.

Anthropologically oriented examination of the culture of Central Europe, with emphasis on Czech culture. Mr. Salzmann.

### 567. PEOPLES OF EUROPE: ALPINE EUROPE.

Analysis of Alpine cultures from prehistoric through contemporary times. Cultural adaptation to environmental variations in mountainous zones and the interrelationship of mountain and lowland communities is emphasized. Mr. Cole.

### 569. CULTURES OF AUSTRALIA AND NEW GUINEA.

The ethnography of aboriginal Australia and New Guinea with emphasis on the particular problems of theory and analysis encountered in these areas. Miss. Munn.

### 570. CARIBBEAN CULTURES.

An ethnographic survey of the Greater and Lesser Antilles, emphasizing the interaction of European colonial and African cultures both historically and in respect to present economic and political problems. Mr. Fraser.

### 615. PRIMATE ANATOMY.

Structure and phylogeny of primates (prosimian, monkey, and ape) with emphasis on evolutionary trends leading to man. Laboratory work provides experience in dissection. Miss. Morbeck.

### 616. PRIMATE EVOLUTION.

Survey of primate evolution, including the evolutionary history of the prosimians, monkeys, apes and man; emphasis upon the diversification of apes and the origin of man.

### 617. PRIMATE BEHAVIOR.

Survey of primate behavior, emphasizing the adaptive behavioral complexes in field and laboratory studies of four living grades of primates: prosimians, monkeys, apes and man.

### 620. ECONOMIC ANTHROPOLOGY.

The patterns of production, distribution and consumption in traditional societies, and the social and political matrices in which these occur. Alternative theoretical approaches to selected problems. Mr. Cole.

### 621. PREHISTORIC CULTURAL ECOLOGY.

Analysis of cultural ecology approaches to the interpretation of the prehistoric record. Prerequisite, permission of instructor. Mr. Wobst.

### 625. THE ANALYSIS OF MATERIAL CULTURE OF THE HISTORIC PERIOD.

The methods and techniques of analysis of temporal and spatial distributions, technology and spatial interrelationships of several forms of material culture. Mr. Woodbury.

### 635. NATIVE AMERICAN LANGUAGES.

Survey of American Indian languages north of Mexico. Genetic classifications and Sapir's classification based on structural resemblances. Types of linguistic structure and structural restatements. Comparative work and reconstructions. Mr. Salzmann.

## ANTHROPOLOGY

### 636. POLITICAL ANTHROPOLOGY.

Anthropological approaches to the study of politics in representative bands, tribes, and states. Evaluation of several analytic instances through reading and discussing relevant political anthropological literature. Mr. Faulkingham.

### 638. ANTHROPOLOGY OF LAW AND CONFLICT.

A comparative, cross-cultural analysis of judicial institutions, socio-cultural sources and patterns of conflict and conflict resolution, and the social functions of law and legal institutions. Miss. Forman.

### 640. ANTHROPOLOGICAL PERSPECTIVES ON RELIGION RITUAL AND MYTH.

An introductory course stressing the relationship between symbolic forms and social order, and the analysis of meaning in ritual and myth. Selected theorists from Durkheim to Victor Turner and Levi-Strauss. Miss. Munn.

### 654. JUDAIC AND ETHNIC GROUPS: A CROSS-CULTURAL PERSPECTIVE.

An ethnographic survey of Judaic ethnic groups, particularly those of Eastern Europe, Israel, and North America, and mainly since the 18th century. Mr. Halpern.

### 662. ORAL FOLKLORE IN NONLITERATE SOCIETIES.

Introduction to the ethnography of oral folklore. Topical emphasis on the analysis and function of tales; geographic emphasis on Africa and North America. Mr. Salzmann.

### 663. LINGUISTIC ANTHROPOLOGY: THE COMPARATIVE DIMENSION

The methods and interpretation of comparative linguistic analysis in the field of anthropology. Prerequisite, Anthro 105 or permission of instructor. Mr. Hudson.

### 664. PROBLEMS IN ANTHROPOLOGY.

Current anthropological thought in regard to specific problems chosen from physical anthropology, archaeology, and cultural anthropology. Prerequisite, permission of instructor. Mr. Fraser.

### 667. CULTURES OF AFRICA

An intensive consideration of several representative peoples of Africa; comparison of their traditional institutions, their appearance in evolutionary perspectives, and adaptations to colonialism and neocolonialism. Prerequisite, permission of instructor. Mr. Faulkingham.

### 668. OLD WORLD PREHISTORY

The Old World prehistoric record discussed in terms of general cultural processes, and with the help of hypotheses, models, and theories developed by anthropologists and scientists. Prerequisite, Anthro 102 or permission of instructor. Mr. Wobst.

### 669. NORTH AMERICAN ARCHAEOLOGY.

An intensive survey of American Indian prehistory north of Mexico. Emphasizes the historical developmental processes in selected geographical regions. Prerequisite, Anthro 102 or permission of instructor. Mr. Woodbury.

### 670. NORTH AMERICAN INDIANS

Indian tribes with various levels of technological development and social complexity, from areas north of Mexico, in terms of their environmental context and the impact of non-Indian societies on their cultures. Prerequisite, Anthro 104. Mr. Woodbury.

### 672. HUMAN VARIATION.

Description and analysis of qualitative and quantitative biological variation and variation between human populations. Mr. Workman.

### 673. CULTURES OF SOUTHEAST ASIA.

An introduction to the history and ethnography of the cultures of Southeast Asia, as these relate to problems of general anthropological interest. Prerequisite, Anthro 104. Mr. Fraser, Mr. Hudson.



## ART

### 674. CULTURES OF THE FAR EAST.

A survey of the culture-history and ethnography of representative peoples of East Asia; peasant subcultures of traditional and contemporary China, Japan, and Korea.  
Prerequisite, permission of instructor.

Mr. Fortier.

### 675. SOUTH AMERICAN ARCHAEOLOGY.

A survey of the pre-Columbian cultures of South America and their development. Emphasis on the Andean areas.  
Prerequisite, Anthro 102 or permission of instructor.

Mr. Proulx.

### 676. THE ETHNOLOGY OF SOUTH AMERICA.

Analysis of the prehistoric, colonial, and contemporary cultures of South America; the Indian, European, and Negro peoples and how they have related to each other over the past three centuries.

Prerequisite, Anthro 104 or permission of instructor.

Mr. Proulx.

### 677. SUMMER FIELD SCHOOL IN ARCHAEOLOGY.

Practical training in archaeology. Prehistoric and Colonial sites will be excavated and instruction given in archaeological methods and techniques.

Prerequisite, Anthro 102 or equivalent.

Credit, 6. Mrs. Dincauze.

### 678. THEORY AND METHOD IN ARCHAEOLOGY.

An intensive examination into the scientific approach to modern archaeological research and the utilization of this approach for deriving and testing theories of prehistory and human behavioral patterns.

Prerequisites, Anthro 360 and permission of instructor.

### 679. CULTURAL DYNAMICS AND APPLIED ANTHROPOLOGY.

Theories of cultural process and their application to practical cross-cultural situations in administration, technical assistance, and community development.

Prerequisite, Anthro 102 or permission of instructor.

Mr. Fraser.

### 680. FIELD COURSE IN CULTURAL ANTHROPOLOGY.

A summer field course for advanced undergraduates or graduates. Supervised training in cultural anthropological research. Location varies from year to year.

Credit, 6.

### 681. QUANTITATIVE METHODS IN ANTHROPOLOGY.

Interpretation and analysis of data from all fields of anthropology. Descriptive statistics, formulation and testing of hypotheses, correlation and regression. Current trends in the methodology of anthropological research.

Mr. Workman.

### 682. HISTORY OF ARCHAEOLOGY.

Events, major sites, and men important in the development of archaeology during the 19th and 20th centuries. Emphasis on theoretical and technical advances related to the present state of archaeology.

## Art

### GRADUATE FACULTY

GEORGE WARDLAW — Painter — *Professor and Chairman of the Department of Art*, B.F.A., Memphis Academy of Arts, 1951; M.F.A., University of Mississippi, 1954.

IRIS H. CHENEY — Art Historian — *Associate Professor and Graduate Program Director in Art History*, B.A., Wellesley, 1950; M.A., 1951; Ph.D., Institute of Fine Arts, N.Y.U., 1963.

## GRADUATE SCHOOL

ARNOLD FRIEDMANN — Designer — *Professor and Graduate Program Director in Design*, B.F.A., Pratt Institute, 1953; M.S., Pratt Institute and New York University, 1960.

JAMES P. HENDRICKS — Painter — *Associate Professor and Graduate Program Director in Studio Art*, B.A., University of Arkansas, 1962; M.F.A., State University of Iowa, 1964.

CARLETON L. REED — Art Educator — *Professor and Graduate Program Director in Art Education*, B.S., New York University, 1941; M.A., Columbia, 1954; D.Ed., New York University, 1964.

FREDERICK BECKER — Printmaker — *Professor*, Otis Art Institute, Los Angeles; Diploma, Beaux Arts Institute of Design, N.Y.C., 1936. Guggenheim Fellowship, 1957.

JACK L. BENSON — Archaeologist, Art Historian — *Professor*, B.A., University of Missouri, 1941; M.A., University of Indiana, 1947; Ph.D., University of Basel, 1952.

PAUL E. BERUBE — Ceramist — *Associate Professor*, B.A., Bowdoin College, 1959; B.F.A., Rhode Island School of Design, 1961; M.F.A., University of Southern California, 1962.

JOHN J. COUGHLIN — Printmaker — *Associate Professor*, B.F.A., Rhode Island School of Design, 1954; M.S., 1961.

HANLYN DAVIES — Painter — *Associate Professor*, N.D.D., Swansea College of Art and University of Wales, 1963; A.T.D., 1964; M.F.A., Yale, 1966.

WALTER B. DENNY — Art Historian — *Associate Professor*, B.A., Oberlin, 1964; M.A., Harvard, 1964; Ph.D., 1970.

TINA FEINGOLD — Painter — *Visiting Assistant Professor*, B.A., University of Arizona, 1968; B.F.A., 1969; M.F.A., Boston University, 1971.

LEONEL GONGORA — Painter — *Associate Professor*, Diploma in Art, Washington University, 1956.

JOHN GRILLO — Painter — *Professor*, Hartford School of Fine Arts, 1935-38; Studied with Hans Hoffman, 1948-51.

CRAIG HARBISON — Art Historian — *Assistant Professor*, B.A., Oberlin, 1966; M.F.A., Princeton, 1969; Ph.D., 1972.

MARTHA J. HOPPIN — Art Historian — *Assistant Professor*, B.A., University of Michigan, 1965; M.A., Harvard, 1966; Ph.D., 1974.

WALTER KAMYS — Painter — *Professor*, Diploma in Art, Chicago Art Institute, 1943.

JERRY KEARNS — Sculptor — *Assistant Professor*, B.A., University of California, Santa Barbara, 1966; M.F.A., 1968.

TERRY KRUMM — Art Educator — *Associate Professor*, B.F.A., University of Denver, 1957; M.A., Hunter College, 1961; Ed.D., Massachusetts, 1972.

ROBERT W. MALLARY — Sculptor — *Professor*, Guggenheim Fellowship, 1964-65.

DONALD R. MATHESON — Printmaker — *Professor and Associate Chairman of Department*, B.S., United States Military Academy, 1938; M.A., University of Michigan, 1951.

## UNIVERSITY OF MASSACHUSETTS

JOSEPH MCGEE — Designer — *Associate Professor*, B.S., Philadelphia College of Art, 1962.

ANNE MOCHON — Art Historian — *Assistant Professor*, B.A., Vassar, 1964; Ph.D., Yale, 1973.

ANN NEW-SMITH — Art Historian — *Assistant Professor*, B.A., Hollins College, 1967; M.A., Boston University, 1971; Ph.D., 1975.

PAUL F. NORTON — Art Historian — *Professor*, B.A., Oberlin College, 1938; M.F.A., Princeton, 1947; Ph.D., 1952.

SUSAN E. PARKS — Ceramist — *Assistant Professor*, B.A., Mount Holyoke College, 1964; M.F.A., Massachusetts, 1968.

HERBERT S. PASTON, *Associate Professor*, B.F.A., Philadelphia College of Arts, 1952; M.A., Columbia, 1956; Ph.D., 1970.

WILLIAM J. PATTERSON — Printmaker — *Assistant Professor*, B.F.A., Hartford Art School of the University of Hartford, 1964; M.F.A., Syracuse University School of Art, 1969.

LYLE N. PERKINS — Ceramist — *Professor*, B.F.A., Alfred University, 1939; M.F.A., 1947; Ph.D., Ohio State, 1956.

NORMAN P. PHILLIPS — Sculptor — *Lecturer*, B.F.A., Massachusetts, 1972; M.F.A., 1974.

MARK W. ROSKILL — Art Historian — *Professor*, B.A., Trinity College, Cambridge, 1956; M.A., Harvard, 1957; M.F.A., Ph.D., Princeton, 1961.

JOHN A. ROY — Painter — *Professor*, B.F.A., Yale, 1957; M.F.A., 1959.

DALE D. SCHLEAPPI — Sculptor — *Associate Professor*, B.A., Pratt Institute, 1959; M.S., 1960.

MELVIN H. SMITH — Architect — *Lecturer*, B.S., Massachusetts Institute of Technology, 1954.

NELSON STEVENS, *Associate Professor of Afro-American Studies, and Adjunct Associate Professor*, B.F.A., Ohio University, 1962; M.F.A., Kent State, 1969.

JOHN F. TOWNSEND — Sculptor — *Professor*, B.S., Carroll College, 1951; M.F.A., University of Minnesota, 1959.

HUI-MING WANG — Painter — *Professor*, B.A., University of Missouri, 1949; M.A., New York University, 1953.

JAMES L. WOZNIAK — Ceramist — *Professor*, B.S., University of Wisconsin, 1954, M.S., 1955; M.F.A., 1958.

## MASTER OF ARTS IN ART HISTORY

The degree of Master of Arts in Art History is offered upon the successful completion of 30 credits and the qualifying examinations. These consist of a comprehensive examination, an examination or publishable paper in the field of special concentration, and an oral examination. Some courses may be taken for graduate credit at Amherst, Hampshire, Mount Holyoke, and Smith Colleges. Most students require two years to complete the degree. For further information write to the Director of Graduate Studies in Art History, Bartlett Hall, University of Massachusetts, Amherst, MA 01002.

## ART

### MASTER OF ARTS IN TEACHING

The Art Department offers a Master of Arts in Teaching (M.A.T.) Program in Art Education, designed for candidates who have completed an undergraduate degree in fine arts or liberal arts and who wish to prepare for teaching in elementary or secondary schools. Enrollment is limited to a small number of highly qualified candidates who have evidenced interest and success in working with young people. A minimum of 39 credits is required for graduation: 21 credits in studio art, art history and related areas, and 18 credits in the professional education area (nine credits of education courses and nine credits Student Teaching Practicum and Practicum Seminar). Students who have an adequate spread of studio experiences as undergraduates may concentrate on one or two studio areas. The program can be completed in three semesters, or during one academic year and two summers. A slide portfolio is required of all applicants.

### MASTER OF FINE ARTS IN ART

This degree program is designed for students who are committed to becoming professional artists and who want an intensive two-year, 60-hour, in-residence preparation for careers in art. There are four principal areas of study: painting, printmaking, ceramics, and sculpture. An applicant must select and qualify in one of these areas. The thesis (required) consists of a one-person exhibition supported by a written statement and other documentation, including a slide of each work in the exhibition. The candidate must also make an oral defense of the thesis.

Thirty-three to 36 credit hours are required in the major; 12-18 of these are thesis credits. Any credits over the 36 limit cannot be counted toward the M.F.A. degree in Art. The remaining 24 to 27 hours, taken in other studio areas and art history constitute the minor. In some instances, if the department chairman approves, an interdisciplinary course of study may be arranged, providing that it is consistent with the student's background and goals. Up to 18 hours of work may be taken as special problems.

Fall enrollment is necessary to assure continuity in the program. The number of graduate students that can be accepted into the studio-art program each fall is limited. Often places are filled by March 1. Therefore, application should be made early. Only those applicants who can clearly demonstrate their ability to work at a professional level need apply. There are a few openings for qualified special students, but admission to courses is on a space available basis, as degree candidates are given preference.

The normal requirements for admission to the Graduate School apply except that applicants to the M.F.A. in Art program must also submit a portfolio of slides of their work.

Application forms should be obtained from and returned to the Graduate Admissions Office by February 1. Slides should be submitted separately to the Director of the Graduate Program, Art Department, Fine Arts Center, University of Massachusetts, Amherst, MA 01002. Space is provided on the regular application form to apply for financial aid, but note that the deadline for University Fellowship applicants is February 1.

All 35 mm color transparencies *must* be submitted in 9" X 11" clear plastic viewing sheets. There must be at least 10 slides of work from the major area. In addition, slides of drawings and work closely allied to the

## ART

major direction should be included. Each slide must be labeled with name of artist, date, size, and medium. Slides of rejected candidates will be returned by April 15. Slides of accepted candidates, including those on waiting list status, will be retained by the department until admission procedures have been completed.

### MASTER OF SCIENCE IN DESIGN

A program in professional design is offered, with emphasis on interior/environmental design and related research. The two-year program is designed to provide professional education to candidates whose undergraduate background is in Art. Candidates who have a strong architectural and/or design background are encouraged to develop special interests and research. The program is interdisciplinary, encouraging work in landscape architecture, art, psychology and other related fields available at the University. A thesis project is required.

The Design Area was established as a unit of the Art Department with a strong interdisciplinary orientation, relating to the Department of Landscape Architecture and Regional Planning and other pertinent units within the University. Several faculty members told cross appointments between the Design Area of the Art Department and the Department of Landscape Architecture and Regional Planning. The program has two goals at present:

1. To provide professional education in design for students who have had a general education in liberal arts with minor emphasis in art, design, or architecture. It is designed to permit the development of individualized professional programs in design, interior/environmental design, furniture design, exhibition design, and in general the professional aspects of environmental design-related fields.
2. To provide graduates with strong background in art, design and related fields with the opportunity to develop research, specialized development and interdisciplinary work. It also provides an opportunity to qualified candidates with a professional design background to prepare for a career in teaching interior/environmental design on the college level.

**Admissions:** Candidates must meet all requirements of the Graduate School. A portfolio must be submitted to be evaluated by a special graduate admissions committee for the Design Area. Portfolio work must be submitted in the form of 35mm color slides and *MUST* be in a plastic viewing sheet. Applications and other supporting documents should be sent to the Graduate Admissions Office, Graduate Research Center and the slides should be sent directly to the Art Department. The Graduate Record Exam is required of all applicants.

**Deadline dates:** for the Summer/Fall-February 1  
for the Spring-October 1

**Requirements:** The M.S. degree in Art (Design) requires candidates to complete from 36 to 45 credits, depending upon their background and area of specialization. A thesis project of up to 10 credits is part of the total credit requirement.

**Transfer credit:** up to six graduate credits may be transferred from other institutions upon the recommendation of the Director of the Graduate Program in Design.

**Undergraduate deficiencies:** A student may be accepted into the program with the stipulation that a

## GRADUATE SCHOOL

specified number of undergraduate courses must be completed as a pre-requisite for graduate work. Such courses are not counted for graduate credit.

**Thesis and Thesis Committee:** A thesis is required in the final semester of graduate work. The design thesis may be a creative project, (design, planning, three-dimensional work, etc.) supported by written documentation, or a combination of research, written and graphic material.

A total of three copies of the thesis project must be prepared by the candidate for the University. Drawings and plans must be incorporated into a bound thesis in the form of photographs. At the time of the thesis presentation, candidates must be prepared for an oral examination (defense) concerning their thesis project.

A thesis committee consisting of a chairperson and a minimum of two or a maximum of three *graduate* faculty members must be constituted for a thesis.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

##### Creative Art

- |                                                                                                                       |                              |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------|
| 700. SPECIAL PROBLEMS.                                                                                                | Credit, 3-12.                |
| 701. SPECIAL PROBLEMS: PAINTING.                                                                                      | Credit, 3-12.                |
| 702. SPECIAL PROBLEMS, PRINTMAKING.                                                                                   | Credit, 3-12.                |
| 703. SPECIAL PROBLEMS: SCULPTURE.                                                                                     | Credit, 3-12.                |
| 704. SPECIAL PROBLEMS: CERAMICS.                                                                                      | Credit, 3-12.                |
| 705. SPECIAL PROBLEMS: DRAWING.                                                                                       | Credit, 3-12.                |
| 710. SEMINAR IN DESIGN.                                                                                               |                              |
| Readings, reports and discussions on the current literature in the area of textiles, clothing and environmental arts. |                              |
| 711. PAINTING.                                                                                                        | Credit, 3-12. Mr. Hendricks. |
| 721. PRINTMAKING.                                                                                                     | Credit, 3-12. Mr. Coughlin.  |
| 731. SCULPTURE.                                                                                                       | Credit, 3-12. Mr. Kearns.    |
| 741. CERAMICS.                                                                                                        | Credit, 3-12.                |
| 779. MAT TEACHING PRACTICUM.                                                                                          | Credit, 9.                   |
| 800. MASTER'S THESIS.                                                                                                 | Credit, up to 18.            |

##### History of Art

- |                                                                                                |                            |
|------------------------------------------------------------------------------------------------|----------------------------|
| 706. SPECIAL PROBLEMS: ART HISTORY.                                                            | Credit, 3-12.              |
| 714. GREEK PAINTING.                                                                           | Mr. Benson.                |
| 715. ROMAN PAINTING.                                                                           | Mr. Benson.                |
| 724. PROBLEMS IN ART OF THE ITALIAN EARLY RENAISSANCE AND THE NORTH EUROPEAN LATE MIDDLE AGES. | Mrs. Cheney, Mr. Harbison. |
| 725. PROBLEMS IN ART OF THE HIGH RENAISSANCE TO THE EARLY BAROQUE.                             | Mrs. Cheney, Mr. Harbison. |
| 727. STUDIES IN MEDIEVAL ICONOGRAPHY.                                                          |                            |



## UNIVERSITY OF MASSACHUSETTS

## ART

### 733. PROBLEMS IN ISLAMIC ART AND ARCHITECTURE.

A graduate seminar dealing with a specific problem or problems in the history of Islamic art.  
Prerequisites: Art 233/533 or Art 235/535 or permission of instructor. Mr. Denny

### 734. NINETEENTH-CENTURY PAINTING & SCULPTURE.

Mr. Roskill.

### 735. ART SINCE 1880.

Mr. Roskill.

### 736. NINETEENTH-CENTURY AMERICAN ARCHITECTURE.

Mr. Norton.

### 740. PROBLEMS IN CONTEMPORARY ART.

### 771. SEMINAR IN ART OF INDIA.

Intensive study of selected aspects of the arts of South/Southeast Asia: development of the Hindu temple, impacts of one cultural system on another as seen in the Indian environment. Mr. Tartakov.

### 781. METHODS OF ART HISTORY.

Deals with the history of the discipline, its methodological orientations, and the conceptual and technical framework within which art-historical research is undertaken. Required of all M.A. candidates in Art History during the first year of graduate study.

### 793. SEMINAR IN 20TH CENTURY ARCHITECTURE.

Intensive study of particular aspects of modern architecture, such as influential personalities and important building types.

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

(For either major or minor credit)

## Creative Art

### 520. PAINTING I.

Easel painting in oil and related media, based on elementary understanding of physical properties of medium, and encouraging individual directions within limitations of sound composition. Six studio hours. Mr. Wang, Mr. Grillo.

### 522. PAINTING II.

Initial concentration on transparent water color, emphasizing control of techniques and mastery of color relationships. Further experience with opaque water color, such as gouache, casein. Six studio hours. Mr. Gongora, Mr. Wang.

### 524. PAINTING III.

Continuation of Art 520. Six studio hours.

Mr. Kamys.

### 526. PAINTING IV.

Advanced work in traditional and contemporary painting techniques and media. Includes encaustic, tempera, oil, oil-resin, acrylic polymer, synthetic media, grounds and supports. Six studio hours. Prerequisites, Art 522, 524. Mr. Hendricks.

### 530. ADVANCED DRAWING.

Investigation and development of various techniques and media. Emphasis on figure drawing. Six studio hours. Mr. Grillo, Mr. Gongora, Mr. Kamys.

### 532. ADVANCED DRAWING PROBLEMS.

Advanced work in traditional and contemporary drawing media. Independent exploration of graphic problems. Solutions to problems sought in relation to student's personal objectives. Six studio hours. Mr. Grillo.

### 540. PRINTMAKING: RELIEF I.

Techniques and aesthetic considerations of the woodblock print and related media. Emphasis on drawing and on understanding technical procedures. Six studio hours. Mr. Becker.

### 542. PRINTMAKING: INTAGLIO I.

Techniques and aesthetic considerations of etching, engraving, aquatint, and related media. Emphasis on drawing and on understanding technical procedures. Six studio hours. Mr. Patterson.

### 544. PRINTMAKING: LITHOGRAPHY I.

Techniques and aesthetic considerations of making lithographs. Emphasis on drawing and on understanding technical procedures. Six studio hours. Mr. Coughlin, Mr. Matheson.

### 546. PRINTMAKING: RELIEF II.

Advanced study of materials, techniques, and esthetic considerations relevant to relief printmaking. Six studio hours. Mr. Becker.

### 548. ART EDUCATION: METHODS AND MATERIALS I.

Methods, tools, and materials used in the public school art program, with special emphasis on the elementary school level. Required for art education majors and a prerequisite for student teaching. Six studio hours. Ms. Perry.

### 550. ART EDUCATION: METHODS AND MATERIALS II.

The literature, philosophies, procedures, and methods used in the teaching of art. Emphasis on the secondary school program. Required for art education majors and a prerequisite for student teaching. Mr. Reed.

### 554. TYPOGRAPHY I.

A studio course in typography and book design. The student selects a text, sets it in type, prints and binds at least one copy of the finished book. Six studio hours.

### 560. SCULPTURE I.

Experimentation with materials. Investigation into the nature of three-dimensional order. Individual projects. Six studio hours. Mr. Townsend, Mr. Schleappi.

### 562. SCULPTURE II.

Continuation of Art 560. Six studio hours.

Mr. Kearns.

### 564. SCULPTURE III.

A sequence of problems in direct and cast-metal sculpture, using a variety of metals, techniques, and processes. Emphasizes traditional and modern foundry methods, and includes gas and electric welding. Prerequisite, Art 562 (previously or concurrently). Six studio hours. Mr. McCaleb.

### 566. SCULPTURE IV.

Encourages development of a personal approach to sculpture and creative decisions. The student selects projects and materials of interest to himself and completes them within a classroom situation. Prerequisite, Art 564 (previously or concurrently). Six studio hours. Mr. Schleappi.

### 570. INTRODUCTION TO METALS AND FIBERS.

Introduction to materials and techniques related to design and execution of objects utilizing, or embellished by, metals, wood, enamels or fibers. Prerequisite: beginning drawing and design.

### 580. CERAMICS I.

The designing and making of pottery with the potter's wheel and related tools. One or more basic courses in creative art should be taken previously. Six studio hours. Mr. Berube, Ms. Parks, Mr. Giesmann.

## ART

582. CERAMICS II.  
Continuation of Art 580.  
Prerequisite, Art 580.  
Six studio hours.

Ms. Parks, Mr. Berube.

584. CERAMICS III.  
Creation of ceramic forms with stress on aesthetic principles rather than utility. Introduction to ceramic glaze technology and coloring media. Related ceramic history.  
Prerequisite, Art 582.  
Six studio hours.

Mr. Giesmann.

586. CERAMICS IV.  
Continuation of Art 584. Emphasis on expressive potential of clay and glazes. Advanced techniques in glaze technology. Introduction to kiln design.  
Prerequisite, Art 584.  
Six studio hours.

Ms. Parks.

588. GLASS BLOWING I.  
An introduction to the principles and techniques of glass blowing from molten mixes, emphasizing experimental form.  
Six studio hours.

Mr. Perkins.

592. LIGHT WORKSHOP.  
Introduction to the use of light as a medium of aesthetic expression. Emphasis on individual investigation into the techniques of modifying the quality of illumination.

Mr. Roy.

640. PRINTMAKING: INTAGLIO II.  
Advanced study of materials, techniques, and aesthetic considerations relevant to etching, engraving and aquatint.  
Six studio hours.

Mr. Patterson.

642. PRINTMAKING: LITHOGRAPHY II.  
Advanced study of lithography. Emphasis on the concepts and techniques of color lithography.  
Six studio hours.

Mr. Matheson.

## History of Art

505. GREEK ART.  
The sculpture, painting, and architecture of ancient Greece from Protogeometric beginnings through the Hellenistic period.

Mr. Benson.

525. EARLY MEDIEVAL ART.  
Early Christian art and the beginnings of Byzantine art in East and West; Coptic art, Barbarian and Celtic influences in northern Europe; Carolingian, Ottonian, and Anglo-Saxon art.

Ms. New-Smith.

527. ART OF THE ROMANESQUE AND GOTHIC PERIODS.  
Art of the High Middle Ages; Romanesque and Gothic art. Emphasis on architecture, monumental sculpture, and painting in western Europe.

Ms. New-Smith.

533. ISLAMIC ART AND ARCHITECTURE I.  
Art and architecture of Islamic peoples from their origins up to the Mongol invasions in the 13th century.

Mr. Denny.

533. ISLAMIC ART AND ARCHITECTURE II.  
Art and architecture of Islamic peoples from the 14th century to our time.

Mr. Denny.

545. ITALIAN ART OF THE EARLY AND HIGH RENAISSANCE (1400-1520).  
The development of Italian art and architecture of the 15th and early 16th centuries in historical context.

Mrs. Cheney.

555. ITALIAN BAROQUE ART.  
Art and architecture in Italy from 1600 to 1750, with emphasis on Rome.

Mrs. Cheney.

## GRADUATE SCHOOL

561. THE ARTS OF AFRICA, OCEANIA, AND PRE-COLUMBIAN AMERICAS.  
An introduction to the so-called "primitive arts" of traditional peoples of Africa, Oceania, and pre-Columbian Americas.

565. BAROQUE ART AND ARCHITECTURE IN NORTHERN EUROPE.  
Art and architecture in France, Flanders, Holland, Germany, and Austria from 1600 to 1750. Students are encouraged to take Art 113 or 115 before taking this course.

Mr. Harbison.

571. ART OF INDIA.  
The effect of the great Eastern religious movement on art in India and surrounding territories. Some attention to secular art and architecture in modern times.

Mr. Tartakov.

573. THE HINDU TEMPLE.  
The conception and development of the Hindu temple in South and Southeast Asia. Emphasis on the structural traditions of the regions covered.

Mr. Tartakov.

575. CHINESE PAINTING.  
Shang tomb paintings; Han, Sung, Yuan, Ming, and Ch'ing Dynasty art; and the interplay between the art of Japan and the West.

Mr. Tartakov.

577. ART OF BUDDHISM.  
The development of Buddhist arts as they spread through Central Asia into East Asia and through Southeast Asia. The influence of the changing religion on the arts.

Mr. Tartakov.

585. EUROPEAN ART, 1780-1880.  
Major developments in painting from David to Post-Impressionism in France, England, and Germany.

Ms. Mochon, Mr. Roskill.

587. MODERN ART, 1880 TO THE PRESENT.  
Emphasis on major artists such as late Cezanne and Gauguin, Picasso, Matisse, Klee, Jackson Pollock, Optical and Pop artists. Main developments of style in relation to these artists.

Ms. Mochon, Mr. Roskill.

591. MODERN ARCHITECTURE, 19TH CENTURY.  
Developments in the late 18th century and the history of the changes in style, technical advances, and aesthetic principles during the 19th century in Europe and America.

Mr. Norton.

593. MODERN ARCHITECTURE, 20TH CENTURY.  
Developments in Europe and America, including influential personalities, social and political influences, structural innovations, and aspects of city planning.

Mr. Norton.

595. AMERICAN ART.  
The earliest colonial art, the impact of later European influences, regional art of the 19th and 20th centuries, and contemporary developments.

Ms. Hoppin.

605. ART OF EARLY MEDITERRANEAN CULTURES.  
The art of high cultures of the Bronze Age: Egyptian, Mesopotamian, Aegian, Hittite, and related cultures.

Mr. Benson.

625. MEDIEVAL PAINTING.  
Early Christian to later medieval painting in Eastern and Western Europe.

Ms. New-Smith.

627. SUMPTUARY ARTS OF THE MIDDLE AGES.  
The technique, style, function, and symbolism of liturgical and secular objects in precious materials from Early Christian through Gothic periods.  
Prerequisite, Art 225 or 227 or permission of instructor.

## UNIVERSITY OF MASSACHUSETTS

### 647. ITALIAN ART OF THE LATE RENAISSANCE AND MANNERISM.

The dissolution of the High Renaissance; proto-Baroque and early Mannerist art; the courtly Mannerism of the revived feudal class after 1530; the artistic response to the Counter-Reformation. Mrs. Cheney.

### 665. ASPECTS OF BAROQUE ART IN NORTHERN EUROPE.

Selected aspects of art and architecture in France, Flanders, Holland, Germany and Austria from 1600 to 1750; a combination lecture-seminar of limited size. Mr. Harbison.

### 671, 673. GREAT THEMES IN ART HISTORY.

Central themes, issues, and problems of an important area in the history of art.

### 675, 677. MASTER OF WESTERN ART.

An intensive study of the work in the field of art. Prerequisite, permission of instructor.

### 691. SEMINAR IN ROMAN ART.

Origins and development of Roman architecture, portraiture, historical relief, painting, and mosaics. Prerequisite, Art 115 or 505, or Ancient History, or permission of instructor. Mr. Benson.

### 693. CRITICISM OF MODERN ART — SEMINAR.

Practical exercises in the evaluation of modern paintings. Discussion of the results.

### 697. ASPECTS OF AMERICAN ARCHITECTURE.

Early American architecture. Colonial architecture in its variety of forms from the first settlements to the Revolutionary War. Mr. Norton.

## Astronomy

(Five-College Cooperative Program)

### GRADUATE FACULTY

WILLIAM M. IRVINE, *Professor and Head of the Astronomy Program*, B.A., Pomona College, 1957; M.A., Harvard, 1958; Ph.D., 1961.

ARTHUR R. SWIFT, *Professor of Physics and Graduate Program Director in Physics and Astronomy*.

THOMAS T. ARNY, *Associate Professor*, B.A., Haverford, 1961; Ph.D., Arizona, 1965.

TOM R. DENNIS, *Assistant Professor* (Mount Holyoke College).

WILLIAM A. DENT, *Associate Professor*, B.S., Case Institute of Technology, 1960; M.S., University of Michigan, 1962; Ph.D., 1965.

H. MARK GOLDENBERG, *Associate Professor of Physics*.

COURTNEY P. GORDON, *Assistant Professor* (Hampshire College).

KURTIS J. GORDON, *Assistant Professor* (Hampshire College).

GEORGE S. GREENSTEIN, *Assistant Professor* (Amherst College).

EDWARD R. HARRISON, *Professor*, Graduate, Institute of Physics, England, 1949; Associate, 1956; Fellow, 1963.

G. RICHARD HUGENIN, *Professor*, B.S., Massachusetts Institute of Technology, 1959; Ph.D., Harvard, 1964.

ROBERT V. KROTKOV, *Professor of Physics*.

WALTRAUT C. SEITTER, *Professor* (Smith College).

## ASTRONOMY

NICHOLAS Z. SCOVILLE, *Assistant Professor*, B.A., Columbia University, 1967; Ph.D., 1972.

JOHN D. STRONG, *Professor Emeritus*, B.A., Kansas, 1926; Ph.D., Michigan, 1930.

EUGENE TADEMARU, *Assistant Professor*, B.S., University of Illinois, 1964; Ph.D., University of Chicago, 1969.

JOSEPH H. TAYLOR, JR., *Associate Professor*, B.A., Haverford, 1963; Ph.D., Harvard, 1968.

DAVID J. VAN BLERKOM, *Associate Professor*, B.S., City College of New York, 1963; Ph.D., Colorado, 1969.

RICHARD E. WHITE, *Assistant Professor* (Smith College).

Students entering the master's and doctor's programs in astronomy are expected to have a sound background in undergraduate physics. Previous training in astronomy is helpful but not required.

The candidate for a master's degree generally takes a normal course load during the first year. The second year is devoted principally to either research directed toward a thesis or advanced course work. Physics courses are included with astronomy courses for determination of the total graduate credits in the major field. If a thesis is offered, at least six credits must be earned in 700-900 series astronomy courses; if a thesis is not offered, 12 credits must be earned in 700-900 series astronomy courses. A general examination must be passed before the degree is awarded.

The general requirements for the Ph.D. in astronomy are those of the Graduate School. A student takes a normal load of basic courses during the first two years. After passing the qualifying examination, the student is expected to devote his major effort to research. Research problems may be in either theoretical or observational areas. There is no foreign language requirement for the Ph.D. in astronomy. The basic courses of the program are 643, 644, 730, 740, 741, and 743. In addition, students will normally take several courses from Physics 701, 702, 703, 704, 705, 706, 707, and 718.

All degree candidates are required to perform teaching in the department. Students requesting a waiver of this requirement must apply to the graduate studies committee.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY

#### 700. SPECIAL PROBLEMS

Special study in some branch of astronomy or astrophysics, either theoretical or experimental, under direction of a faculty member. May be repeated for credit. Prerequisites, permission of the Head of the Astronomy program and the directing faculty member. Credit, 1-6.

#### 730. RADIO ASTROPHYSICS

The physical theory fundamental to radio astronomy: propagation of electromagnetic waves in isotropic and anisotropic media with emphasis on plasmas, Faraday rotation, the emission and absorption of synchrotron radiation and bremsstrahlung emission, spectral lines at radio frequencies; non-thermal radio source models. Prerequisites, Physics 552 and 586. Mr. Dent.

#### 731. RADIO ASTRONOMY

An introduction to observational radio astronomy. Topics include: a brief survey of areas to which radio observations have made important contributions; antenna systems, inter-



## BIOCHEMISTRY

ferometers, radiometric systems, and other instrumentation; observing methods and techniques.

Prerequisites, Physics 552 and Math 641 or equivalent.

Mr. Huguenin.

### 740. GALACTIC AND EXTRA-GALACTIC ASTRONOMY.

The stellar density and luminosity functions as applied to the problem of galactic structure. Determination of the galactic force field from stellar motions. Spiral structure, star clusters and their stability.

Prerequisite, Physics 556.

Mr. Huguenin.

### 741. THE INTERSTELLAR MEDIUM.

Observed properties of the interstellar medium from optical and radio data: composition, distribution, and motions. Transfer of dilute radiation and its production in a rarefied gas. The dynamics of the gas as influenced by radiation and gravity.

Prerequisite, Astron 644 or permission of instructor.

Mr. Arny.

### 743. STELLAR ATMOSPHERES.

Theory of stellar atmospheres. Observational methods and observational data, formation of the continuous spectrum, line formation and curve of growth techniques in normal stars, stars with envelopes, variable stars, novae, magnetic fields in stars. Departure from local thermo-dynamic equilibrium.

Prerequisite, Astron 644.

Mr. Van Blerkom.

### 744. STELLAR STRUCTURE.

Stellar structure and evolution: energy generation and transfer in the interior of stars, convective and radiative equilibrium, the computation of stellar models and evolution of young and old stars, red giants, pulsating stars, novae, and white dwarfs.

Prerequisites, Astron 643, COINS 409, or equivalent.

Mr. Harrison.

### 745. THE SUN.

The determination of physical conditions in the solar atmosphere using the various observational data. The features of both the quiet and the active sun: granulation, limb darkening, plagues, sunspots, etc. Solar-terrestrial relationships.

Prerequisite, Astron 644.

### 746. SOLAR SYSTEM PHYSICS.

The physics and chemistry of planetary atmospheres, surfaces, and interiors. Comets, meteors, and asteroids. The solar wind, solar terrestrial relations, and the interplanetary medium. Advanced topics in mechanics applicable to astronomical problems.

Prerequisites, Physics 552 and 556 and Astron 644, or permission of instructor.

Mr. Irvine.

### 748. COSMOLOGY AND GENERAL RELATIVITY.

Observational cosmology and cosmological Principles. Background radiation and Olbers' paradox. Newtonian cosmology. General relativity, gravitational waves, relativistic cosmology, and gravitational collapse. Theories of the universe and the origin of celestial structure.

Prerequisite, Physics 585.

Mr. Harrison.

### 797, 798. SEMINAR — REVIEW OF CURRENT LITERATURE.

Discussion and review of current articles in the astronomical literature. May be repeated for credit. Required of graduate students.

*Credit, 1 each semester.*

### 850. ADVANCED TOPICS IN ASTRONOMY.

Topics of special interest not covered in regular courses.

Prerequisite, permission of instructor.

### 860. SEMINAR ON RESEARCH TOPICS IN ASTRONOMY.

Topics of current interest not covered in regular courses. Instruction via reading assignments and seminars. May be repeated for credit.

Prerequisite, permission of instructor.

*Credit, 1-3.*

## 800. MASTER'S THESIS.

*Credit, variable.*

## 900. DOCTORAL DISSERTATION.

*Credit, 18.*

## COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

(For either major or minor credit)

### 538. TECHNIQUES OF MODERN ASTRONOMY.

An introduction to modern methods of astronomical observation and data reduction. Specific techniques of optical astronomy, radio astronomy, and space astronomy discussed and analyzed. Laboratory experiments and field observations.

Prerequisites, Physics 113 or 107.

Mr. Huguenin.

### 643. ASTROPHYSICS I.

Basic topics in astronomy and astrophysics. Gravitational equilibrium configurations, virial theorem, polytropes, hydrodynamics, thermodynamics, radiation transfer, convective and radiative equilibrium, stellar and planetary atmospheres, the equations of stellar structure. Miscellaneous topics on the physics of stellar and galactic structure.

Prerequisite, permission of instructor.

*Credit, 4. Mr. Harrison.*

### 644. ASTROPHYSICS II.

Atomic physics and opacity. Nuclear physics and nucleosynthesis in stars. Gravitational instability and star formation. Stellar evolution and electron-degenerate configurations. Gravitational collapse. Topics in plasma physics and the propagation of electromagnetic waves. Topics in magnetohydrodynamics and Alfvén waves. Dynamic and kinematic principles of cosmology and a review of the underlying physical processes.

Prerequisite, Astron 643.

*Credit, 4. Mr. Harrison.*

## RELATED COURSES

### Physics

### 701. CLASSICAL MECHANICS.

### 702. STATISTICAL PHYSICS.

### 703. INTRODUCTORY QUANTUM MECHANICS I.

### 704. INTRODUCTORY QUANTUM MECHANICS II.

### 705. METHODS OF MATHEMATICAL PHYSICS.

### 706. CLASSICAL ELECTRODYNAMICS I.

### 707. CLASSICAL ELECTRODYNAMICS II.

### 718. BASIC PHYSICS OF ATOMS AND MOLECULES.

## Biochemistry

## GRADUATE FACULTY

HENRY N. LITTLE, *Professor and Graduate Program Director*, B.S., Cornell, 1942; M.S., Wisconsin, 1946; Ph.D., 1948.

R.C. FULLER, *Professor and Head of the Department of Biochemistry*, B.A., Brown, 1947; M.A., Amherst, 1948; Ph.D., Stanford, 1952.

JOHN F. BRANDTS, *Professor of Chemistry*.

PAT W. CAMERINO, *Associate Professor and Acting Director of the Office of Grant and Contract Administration*, B.S., Kent State, 1957; Ph.D., Cornell, 1961.

MARK S. FISCHER, *Assistant Professor*, A.B., Brandeis, 1965; Ph.D., California, Berkeley, 1969.

## UNIVERSITY OF MASSACHUSETTS

MAURILLE J. FOURNIER, *Assistant Professor*, B.A., Vermont, 1962; Ph.D., Dartmouth, 1967.

ANTHONY M. GAWIENOWSKI, *Associate Professor*, B.A., Villanova, 1948; M.A., Missouri, 1953; Ph.D., 1956.

THOMAS L. MASON, *Assistant Professor*, B.S., Wisconsin, 1962; M.S., Louisiana State, 1965; Ph.D., Minnesota, 1970.

JOHN H. NORDIN, *Associate Professor*, B.S., Illinois, 1956; Ph.D., Michigan State, 1961.

TREVOR ROBINSON, *Associate Professor*, B.A., Harvard, 1950; M.A., 1951; M.S., Massachusetts, 1953; Ph.D., Cornell, 1956.

DONALD L. SCHNEIDER, *Assistant Professor*, B.A., Kalamazoo, 1963; Ph.D., Michigan State, 1969.

IRA S. SCHWARTZ, *Assistant Professor*, B.S., City College of New York, 1968; Ph.D., City University of New York, 1973.

LINDA L. SLAKEY, *Assistant Professor*, B.S., Siena Heights, 1962; Ph.D., Michigan, 1967.

EDWARD W. WESTHEAD, *Professor*, B.S., Haverford, 1951; M.S., 1952; Ph.D., Brooklyn Polytechnic, 1955.

ROBERT A. ZIMMERMANN, *Associate Professor*, B.A., Amherst, 1959; Ph.D., Massachusetts Institute of Technology, 1964.

### GENERAL INFORMATION

Candidates for the degrees of Master of Science and Doctor of Philosophy in Biochemistry are accepted for admission under the general regulations of the Graduate School. Students normally must complete the following undergraduate courses before admission to either degree program: two semesters each of organic chemistry, physical chemistry; a year of calculus, physics and biology. As part of these requirements, all students prior to their first registration must take achievement or placement exams in the areas of organic chemistry, analytical chemistry, and physical chemistry. Satisfactory completion of the admission requirements will be judged by the Graduate Study Committee of the Department on evidence of the student's undergraduate transcript and his scores on these examinations. Those students with deficiencies must remove them at the earliest possible date by taking the appropriate courses. Students may register for graduate credit courses while doing this remedial work, but no graduate credit is given for such remedial courses.

### SUMMARY OF REQUIREMENTS FOR THE PH.D. DEGREE

Upon entrance a student is assigned an adviser who will work out the first-year courses, seminar and research programs with the entering student. At the end of the first two semesters the student must have remedied any deficiencies, and have taken the equivalent of one year's graduate study in biochemistry (including laboratory work).

All students must attend regular departmental seminars. A comprehensive examination (of the research-proposal and written-comprehensive type) is required of all Ph.D. students. The Department requires that students demonstrate competence in one foreign language either through previous course work or through a Departmental examination. In addition to the comprehensive examination, all Ph.D. students must complete the preparation of a dissertation satisfactory to

## BIOCHEMISTRY

their Dissertation Committees and pass a final oral examination on that dissertation.

### SUMMARY OF REQUIREMENTS FOR THE M.S. DEGREE

Entrance requirements for the master's degree are similar to those for the Ph.D. degree. They may be fulfilled by remedial work during the first year. All students are expected to complete 30 graduate credits, no more than 10 of which may be earned by means of a thesis. A thesis, based on either laboratory or library research, is defended in an oral examination.

### GENERAL REQUIREMENTS FOR ALL GRADUATE STUDENTS

All entering candidates for either the M.S. or Ph.D. degree must participate in one or more research projects before the end of the first year of studies. It is expected that the master's degree will take two years to complete, and the Ph.D. degree two years after the award of a master's degree from this or another institution.

### CONCENTRATION IN NEUROCHEMISTRY

An interdisciplinary concentration in neurochemistry is currently being developed in conjunction with the Departments of Psychology, Zoology and Computer Science and Information. For current information contact the Graduate Program Director of the Department of Biochemistry.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY

721, 722. ADVANCED BIOCHEMICAL TECHNIQUES. A laboratory course to provide experience in isolation, identification and analysis of biochemical compounds. Prerequisite, permission of instructor.

Credit, 4(721), 3(722). Mr. Fournier.

#### 724. SPECIAL TOPICS IN BIOCHEMISTRY.

Topics of current interest which may include hormones, lipids, carbohydrates, control mechanisms, protein synthesis, membranes, nucleic acids, biochemical data analysis and protein-nucleic acid interactions. Prerequisite, Biochem 524.

#### 728. PROTEIN PHYSICAL CHEMISTRY.

The chemical, physical, and biological properties of proteins. Prerequisites, Biochem 524 and Chem 586. Mr. Brandts.

#### 729. ENZYMES.

Basic aspects of enzyme assay, preparation, kinetics, and properties. Topics of current importance such as studies on active sites, mechanisms, and controls of enzyme action. Prerequisite, Biochem 524. Mr. Westhead.

#### 731. PLANT BIOCHEMISTRY.

The chemistry and metabolism of plants with particular emphasis on higher plants. Topics such as nitrogen metabolism, photosynthesis, and the chemistry of compounds peculiar to plants. Prerequisite, Biochem 524. Mr. Robinson.

#### 800. MASTER'S THESIS.

Credit, 10.

#### 891. SEMINAR.

Required of all students. Each semester oriented around topics such as molecular biology, membranes.

Credit, 2 each semester.

## BOTANY

900. DOCTORAL DISSERTATION. *Credit, 18.*

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

523, 524. GENERAL BIOCHEMISTRY.  
Introductory course for students majoring in chemistry or in the biological sciences. A background for more advanced or specialized study.  
Prerequisites, Chem 166 or equivalent; second semester requires Chem 281 or equivalent. *Credit, 3 each semester.*

525, 526. BIOCHEMISTRY LABORATORY.  
Introduction to laboratory work with biochemical materials and techniques.  
Prerequisite, Chem 127 or equivalent. *Credit, 1-2.*

### COURSES NOT FOR MAJOR CREDIT (No graduate credit for students majoring in biochemistry.)

520. ELEMENTARY BIOCHEMISTRY.  
The more important facts relating to biological materials and processes. Primarily for students not eligible for Biochem 523 or 524. Not open to chemistry or biochemistry majors.  
Three class hours, one 3-hour laboratory period. *Credit, 4.*

## Botany

### GRADUATE FACULTY

CARL P. SWANSON, *Professor and Acting Head of the Department of Botany*, B.S., Massachusetts State, 1937; M.A., Harvard, 1939; Ph.D., 1941.

DAVID L. MULCAHY, *Associate Professor and Graduate Program Director*, B.A., Dartmouth, 1959; Ph.D., Vanderbilt, 1963.

PAUL E. BARRETT, *Assistant Professor*, B.S., University of New Hampshire, 1964; M.S., 1966; Ph.D., British Columbia, 1972.

DAVID W. BIERHORST, *Professor*, B.S., Tulane, 1947; M.S., 1949; Ph.D., University of Minnesota, 1952.

HOWARD E. BIGELOW, *Professor*, B.A., Oberlin, 1949; M.A., 1951; Ph.D., Michigan, 1956.

MARGARET E. BARR BIGELOW, *Professor*, B.A., British Columbia, 1950; M.A., 1952; Ph.D., Michigan, 1956.

EDWARD L. DAVIS, *Professor*, B.A., Harvard, 1951; M.S., Massachusetts, 1953; Ph.D., Washington University, 1956.

PAUL J. GODFREY, *Associate Professor*, B.S., Connecticut, 1962; Ph.D., Duke, 1969.

EDWARD J. KLEKOWSKI, JR., *Associate Professor*, B.S., 1962; M.S., N.C. State, 1964; Ph.D., University of California at Berkeley, 1968.

ROBERT B. LIVINGSTON, *Professor*, B.A., Colorado College, 1938; M.A., Duke, 1941; Ph.D., 1947.

JAMES A. LOCKHART, *Professor*, B.S., Michigan State, 1949; M.S., 1952; Ph.D., California at Los Angeles, 1954.

LIVJA RAUDZENS, *Assistant Professor*, B.A., Barnard, 1961; M.A., Columbia, 1964; Ph.D., 1967.

BERNARD RUBINSTEIN, *Assistant Professor*, B.S., Michigan State, 1960; M.S., Purdue, 1962; Ph.D., California at Berkeley, 1968.

## GRADUATE SCHOOL

RUDOLF M. SCHUSTER, *Professor*, B.S., Cornell, 1945; M.S., 1946; Ph.D., Minnesota, 1948.

OTTO L. STEIN, *Professor*, B.S., Minnesota, 1949; M.S., 1952; Ph.D., 1954.

ARTHUR I. STERN, *Associate Professor*, B.S., City College of New York, 1953; Ph.D., Brandeis, 1962.

SEYMOUR SHAPIRO, *Professor and Dean of the Faculty of Natural Sciences*, Mathematics, B.S., Michigan, 1947; Ph.D., 1953.

OSWALD TIPPO, *Commonwealth Professor*, B.S., Massachusetts, 1932; M.A., Harvard, 1933; Ph.D., 1937.

JAMES W. WALKER, *Associate Professor*, B.A., University of Texas, 1964; Ph.D., Harvard, 1970.

PETER L. WEBSTER, *Associate Professor*, B.S., University of St. Andrews, 1964; Ph.D., Western Reserve, 1968.

ROBERT T. WILCE, *Professor*, B.S., University of Scranton, 1950; M.S., Vermont, 1952; Ph.D., Michigan, 1957.

Candidates for the degrees of Master of Arts, Master of Science, and Doctor of Philosophy are accepted for admission under the general regulations of the Graduate School. Admission to advanced courses does not imply admission to candidacy for an advanced degree. Only students whose knowledge of botany and related chemical and physical sciences is considered by the Department to be adequate will be accepted as candidates for advanced degrees. Research work leading to the thesis may be selected from the fields of anatomy, cytology, ecology, morphology, morphogenesis, physiology, and taxonomy. Candidates for the degree of Master of Arts in Teaching are expected to meet all the departmental requirements of the other masters degrees.

The Botany Department normally requires candidates for the Ph.D. degree to demonstrate on the intermediate level reading knowledge of two foreign languages, one of which must be German. Choice of the second language will be made after consultation between the student and his guidance committee. Waiving of the requirement for the second language requirement may be made by consultation of the student with his guidance committee and must be approved by the departmental Degree Requirements Committee.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

700. SPECIAL PROBLEMS.  
Research not expected to terminate in a thesis; advanced study in special subjects. *Credit, 1-5 each semester.*

711, 712. ADVANCED PLANT PHYSIOLOGY.  
Selected topics in plant physiology. Lectures, laboratory, and individual conferences.  
Prerequisites, Botany 511 and permission of instructor. *Credit, 2-4 each semester.*

Miss Fulz, Mr. Lockhart, Mr. Rubinstein, Mr. Stern.

715. PLANT GROWTH REGULATORS.  
Recent advances in the field, including phytochrome, auxins, gibberellins, cytokinins, and herbicides. The mechanisms whereby these materials control plant growth and development. Possible experimental approaches.  
Prerequisites, Botany 511 and one semester of biochemistry.

Mr. Rubinstein, Mr. Marsh



## UNIVERSITY OF MASSACHUSETTS

## BOTANY

### 721. ADVANCED PLANT ECOLOGY.

Lectures, conferences, critical reading, and reports on advanced considerations of synecology and autecology.  
Prerequisite, Botany 521. Mr. Godfrey.

### 731. ADVANCED MYCOLOGY.

Systematics and ecology of the higher ascomycetes and basidiomycetes.  
Prerequisite, Botany 531 or equivalent. Credit, 4.  
Mr. H. E. Bigelow, Mrs. M. E. B. Bigelow.

### 741. ADVANCED PHYCOLOGY

Detailed study of marine and fresh-water algae. Emphasis on phylogeny, life histories, and ecology.  
Prerequisite, Botany 541 or equivalent. Mr. Wilce.

### 750. PLANT PHOTOSYNTHESIS.

Lectures and discussions of the literature on the mechanisms and requirements of photosynthesis, including the light and dark reactions and the process of photorespiration.  
Prerequisite, Botany 512 or Chem 524 or equivalent. Mr. Stern.

### 761. BIOLOGY OF LOWER PLANTS.

The use of fungi and algae as experimental organisms for investigations in physiology and genetics.  
Prerequisite, Botany 511, Zool 660, or Chem 524.  
Credit, 4. Mrs. Fulz.

### 781. ADVANCED ANGIOSPERM SYSTEMATICS.

Consideration of angiosperm systematics and evolution at an advanced level. Topics may vary from year to year. May be repeated with permission of instructor. Three class hours, one 3-hour laboratory-discussion period.  
Prerequisite, Botany 528 and Botany 581, or permission of instructor. Credit, 4. Mr. Walker.

### 800. MASTER'S THESIS.

Maximum credit, 10.

### 801. PLANT MORPHOGENESIS.

Lectures, discussions, and reading on the development of the plant body.  
Prerequisites, Botany 591, Botany 511 or equivalent.  
Mr. Shapiro, Mr. Stein.

### 825. PALYNOLOGY

Comparative morphology of modern and fossil pollen grains and spores, including development of the pollen wall. Emphasis on the taxonomic use of pollen characters for angiosperm systematics. Mr. Walker.

### 850. SEMINAR

Credit, 1 each semester; maximum credit, 6.

### 900. DOCTORAL DISSERTATION.

Credit, 18.

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

(For either major or minor credit)

### 511. INTRODUCTORY PLANT PHYSIOLOGY.

How the plant grows and feeds itself. Methods of communication among cells and organs, and between plant and environment.  
Prerequisite, 1 semester organic chemistry.  
Credit, 4. Mr. Rubinstein, Mr. Stern.

### 512. PLANT METABOLISM.

The basic metabolic processes in plants including carbohydrate metabolism, glycolysis, respiration, photosynthesis, lipid metabolism and protein synthesis. Biological as well as chemical approach. Emphasis on free energy changes and the enzymatic reactions and pathways involved.  
Credit, 4. Mr. Jennings, Mr. Marsh, Mr. Stern.

### 515. PLANT GROWTH.

Description and analysis of the physiology, kinetics, and energetics of plant growth; the methods used to study growth. Cells, tissues, whole plants, and assemblages of plants.  
Prerequisites, Botany 511 and College Physics.  
Mr. Lockhart.

### 519. ECOLOGICAL PLANT PHYSIOLOGY.

Physiology of plants in relation to the classes of problems they face and the various strategies evolved for survival and growth.  
Prerequisites, Botany 211 and one semester of differential calculus. Mr. Lockhart.

### 521. PLANT ECOLOGY

Interrelationships between plants and their environment; the structure and development of plant communities.  
Mr. Barrett, Mr. Godfrey, Mr. Mulcahy.

### 522. AUTECOLOGY.

Plant behavior in relation to the physical and biological environment. Emphasis on the ecology of individual plants.  
Prerequisites, Botany 511 and 521. Mr. Godfrey.

### 524. COASTAL PLANT ECOLOGY.

The botany and ecosystem processes along the U.S. East Coast. Emphasis on salt marshes, maritime forests and grasslands, dune strand, and the impact of modern man.  
Prerequisite, Botany 521. Mr. Godfrey.

### 526. PLANT GEOGRAPHY.

Principles governing the development and natural distribution of plants and plant communities. Special consideration of the vegetation of North America.  
Prerequisite, Botany 521.

### 528. PRINCIPLES OF EVOLUTION

Ecological phenomena through the application of genetic concepts. The adaptation of individuals, populations, and communities as functional units.  
Prerequisite, introductory botany or zoology. Mr. Mulcahy.

### 531. GENERAL MYCOLOGY

Survey of the various fungi, their life history and distribution, their significance in disease, their utilization by man.  
Mr. H. E. Bigelow, Mrs. M. E. B. Bigelow.

### 541. PHYCOLOGY

The phylogeny, taxonomy, morphology, and ecology of the major groups of marine and fresh water algae. Includes field work in both marine and fresh water environments.  
Mr. Wilce.

### 551. THE ARCHEGONIALES

The morphology, evolution, and systematics of primitive land plants. Emphasis on evolution and systematics of Bryophyta. Mr. Schuster.

### 555. EXPERIMENTAL PTERIDODOLOGY

An integrated view of physiological and genetical parameters of the pteridophyte life cycle.  
Prerequisites, Botany 240 or Zool 240, and Botany 211.  
Mr. Klekowski.

### 570. CYTOGENETICS

The correlation of genetic data with chromosome behavior, including an analysis of the mechanism of crossing over. Evolutionary considerations of changes to chromosome structure and number.  
Prerequisites, Zool 540 and a cytology course preferred.  
Mr. Swanson.

### 580. ORIGIN, EVOLUTION, AND DISTRIBUTION OF FLOWERING PLANTS.

Survey of evolutionary history of primitive flowering plants and the significance of their geographic distribution.  
Prerequisite, Botany 125 or equivalent. Recommended, Botany 581, 591.  
Credit, 4. Mr. Smith.

### 581. INTRODUCTORY ANGIOSPERM SYSTEMATICS

The evolution and systematics of flowering plants, emphasizing families and their relationships. Credit, 4. Mr. Walker.

### 591. PLANT ANATOMY.

Origin and structure of vegetative and reproductive organs of seed plants coordinated with exercises in preparation of stained slides for microscopic studies.  
Credit, 4. Mr. Berthorst.

## BUSINESS ADMINISTRATION

### 601. MORPHOGENESIS.

Lectures and laboratory exercises demonstrating the development of plant form utilizing examples from throughout the plant kingdom.  
Mr. Davis.

### 603. PLANT MORPHOLOGY.

The life cycles of various non-vascular plant taxa, the dynamics of their evolution and the interpretation of various morphological structures.

Prerequisite, Botany 100 or permission of instructor.

Credit, 4. Mrs. Bigelow, Mr. Schuster, Mr. Wilce.

### 604. PLANT MORPHOLOGY.

As 603, but vascular plant taxa.

Credit, 4. Mr. Bierhorst, Mr. Schuster.

### 611. CYTOLOGY.

Development, structure, and function of cell organelles; cell reproduction and differentiation, with reference to the behavior and role of the nucleus.

Mr. Stein, Mr. Swanson, Mr. Webster.

## COURSE NOT FOR MAJOR CREDIT

### 635. AQUATIC VASCULAR PLANTS.

Systematics, ecology, and fundamental importance of aquatic plants. For majors in Wildlife.

Two 3-hour class-laboratory periods.

Prerequisites, Botany 100 and 126.

Mr. Ahles.

## Business Administration

### GRADUATE FACULTY

GEORGE S. ODIORNE, *Professor and Dean of the School of Business Administration*, B.S., Rutgers, 1948; M.B.A., New York University, 1951; Ph.D., 1957.

JACK S. WOLF, *Professor and Associate Dean of the School of Business Administration*, B.A., Coe, 1949; M.B.A., Wharton, 1950; Ph.D., State University of Iowa, 1957.

MARY K. BARBER, *Associate Professor of Marketing and Graduate Program Director for Masters Programs*, B.S., Massachusetts State, 1944; M.A., New York University, 1948; Ph.D., 1969.

KENT B. MONROE, *Associate Professor of Marketing and Graduate Program Director of the Ph.D. Program*, B.A., Kalamazoo, 1960; M.B.A., Indiana, 1961; D.B.A., Illinois, 1968.

WYNN A. ABRANOVIC, *Associate Professor of General Business and Finance*, B.E.E., Rensselaer Polytechnic Institute, 1963; M.S., 1965; Ph.D., 1969.

JOHN W. ANDERSON, *Professor of Accounting*, B.S., Indiana University, 1949; M.B.A., 1953; C.P.A., Maine, 1952.

MORTON BACKER, *Professor of Accounting*, B.B.A., Boston University, 1939; M.Lt., University of Pittsburgh, 1950; Ph.D., 1958; C.P.A., New York and West Virginia, 1941.

JOSEPH L. BALINTFY, *Professor of General Business and Finance*, Dipl. Eng., University of Technical Sciences, 1947; Dipl. Ec., 1948; D.Eng., The Johns Hopkins University, 1962.

ALEXANDER BARGES, *Professor of General Business and Finance*, B.S., University of California, 1956; M.B.A., Northwestern, 1956; Ph.D., 1962.

TIM BORNSTEIN, *Professor of Management*, B.A., University of Louisville, 1954; J.D., Harvard, 1957.

## GRADUATE SCHOOL

BEN S. BRANCH, *Associate Professor of General Business and Finance*, B.A., Emory, 1965; M.A., Texas, 1968; M.A., Michigan, 1969; Ph.D., 1970.

MARY LOU BRYANT, *Assistant Professor of Management*, B.A., Kentucky Southern, 1967; M.B.A., Indiana, 1970; D.B.A., 1973.

VICTOR P. BUELL, *Professor of Marketing*, B.A., Pennsylvania State, 1938.

D. ANTHONY BUTTERFIELD, *Associate Professor of Management*, B.S., Yale, 1961; M.A., Michigan, 1963; Ph.D., 1968.

ARTHUR E. CARLISLE, *Professor of Management*, B.A., McGill, 1948; M.B.A., Michigan, 1963; Ph.D., 1966.

GORDON K. C. CHEN, *Associate Professor of Management*, B.S., Great China University, 1945; M.A., University of Iowa, 1950; Ph.D., 1956.

SIDNEY J. CLAUNCH, *Associate Professor of Management*, B.A., Ohio, 1949; M.B.A., Wisconsin, 1951; Ph.D., 1958.

JOHN T. CONLON, *Professor of Management*, B.B.A., Massachusetts, 1949; M.A. Connecticut, 1951; Ph.D., Michigan State, 1960.

A. WAYNE CORCORAN, *Professor*, B.S., Cornell, 1954; M.S., University of Rochester, 1960; C.P.A., State University of New York, 1960; Ph.D., 1966.

CARL DENNLER, JR., *Professor of Accounting*, B.S., University of Missouri, 1948; M.A., 1950; Ph.D., Wisconsin, 1962.

ARTHUR ELKINS, *Associate Professor and Chairman of the Department of Management*, B.B.A., Massachusetts, 1957; M.S., Columbia, 1958; D.B.A., Indiana, 1967.

FREDERICK E. FINCH, *Associate Professor of Management*, B.S., Kent State, 1961; M.B.A., 1963; D.B.A., University of Washington, 1966.

JOSEPH E. FINNERTY, *Assistant Professor of General Business and Finance*, B.S., Notre Dame, 1967; M.B.A., Michigan, 1969; Ph.D., 1974.

JOHN M. FITZGERALD, *Assistant Professor of Accounting*, B.S., U.S. Merchant Marine Academy, 1944; B.B.A., Southern Methodist, 1950; M.A., Connecticut, 1961.

DONALD G. FREDERICK, *Professor of Marketing*, B.S., Indiana, 1957; M.B.A., 1958; D.B.A., Washington University, 1964.

SAMUEL GOLDMAN, *Assistant Professor of General Business and Finance*, B.B.A., Michigan, 1960; M.B.A., Wharton (Pennsylvania), 1962; J.D., Northwestern, 1965.

MARTIN L. GOSMAN, *Associate Professor of Accounting*, B.B.A., Wisconsin, 1965; M.B.A., 1966; Ph.D., 1971; C.P.A., Wisconsin, 1972.

VAN COURT HARE, JR., *Professor of Management*, B.S., Massachusetts Institute of Technology, 1950; M.A., Columbia, 1953; Ph.D., 1961.

H. RICHARD HARTZLER, *Professor and Chairman of the Department of General Business and Finance*, B.A., Indiana, 1950; J.D., 1955.

LAWRENCE A. JOHNSON, *Associate Professor of Marketing*, B.S.B.A., Boston University, 1955; M.B.A., 1958; Ph.D., Stanford, 1970.

## UNIVERSITY OF MASSACHUSETTS

EUGENE E. KACZKA, *Professor of General Business and Finance*, B.S., Rensselaer Polytechnic Institute, 1960; M.S., 1961; Ph.D., 1966.

ANTHONY T. KRZYSTOFIK, *Professor and Chairman of the Department of Accounting*, B.S., American International College, 1952; M.A., Connecticut, 1961; C.P.A., Massachusetts, 1956.

PREM KUMAR, *Assistant Professor of Finance*, B.S., University of Delhi, India, 1965; M.S., Wisconsin, 1967; Ph.D., 1970.

RICHARD LEIFER, *Assistant Professor of Management*, A.B., California at Berkeley, 1964; M.S., 1966; Ph.D., Wisconsin, 1975.

ROBERT W. LENTILHON, *Professor of Accounting*, B.S., Rhode Island, 1949; M.B.A., Boston University, 1963; C.P.A., Massachusetts.

BERTIL LIANDER, *Associate Professor of Marketing*, Undergraduate, Schartau College, 1948; M.B.A., Stockholm School of Economics, 1954; Ph.D., Massachusetts, 1972.

JOSEPH A. LITTERER, *Professor of Management*, B.S., Drexel Institute of Technology, 1950; M.B.A., 1955; Ph.D., Illinois, 1959.

JAMES B. LUTKE, *Professor of General Business and Finance*, B.A., State University of Iowa, 1947; M.A., 1948; Ph.D., 1951.

THOMAS McAULEY, *Lecturer in Management*, B.S., Northeastern, 1941; M.S., B.A., Massachusetts, 1974.

ROBERT E. MCGARRAH, *Professor of Management*, B.S., Lafayette, 1943; M.S., Princeton, 1948; Ph.D., Cornell, 1951.

STEPHEN R. MICHAEL, *Professor of Management*, B.A., Rutgers University, 1948; M.A., Harvard, 1949; Ph.D., Columbia, 1967.

CRAIG L. MOORE, *Associate Professor of General Business and Finance*, B.S., West Virginia, 1967; M.A., Syracuse, 1972; Ph.D., 1972.

ULA K. MOTEKAT, *Associate Professor of Accounting*, B.S., Denver, 1964; M.B.A., 1966; D.B.A., Colorado, 1972.

JAMES P. O'CONNELL, *Associate Professor of Accounting*, B.B.A., Massachusetts, 1958; M.B.A., Boston University, 1961; J.D., Western New England, 1973; C.P.A., Massachusetts.

GRANT M. OSBORN, *Professor of General Business and Finance*, B.S., Brigham Young, 1948; M.B.A., Stanford, 1950; Ph.D., Pennsylvania, 1955.

GORDON W. PAUL, *Professor and Head of the Department of Marketing*, B.S., Tulsa, 1955; M.B.A., University of Texas, 1962; Ph.D., Michigan State, 1966.

ROBERT H. PLATTNER, *Associate Professor of General Business and Finance*, B.S., Missouri, 1950; M.B.A., Ohio State, 1962; Ph.D., University of Michigan, 1968.

ROBERT L. RIVERS, *Professor of General Business and Finance*, B.A., Clark, 1943; M.S., Illinois, 1947; Ph.D., 1957.

JOSEPH L. SARDINAS, JR., *Assistant Professor of Accounting*, B.S., Connecticut, 1969; M.B.A., 1970; Ph.D., Pennsylvania State, 1975.

## BUSINESS ADMINISTRATION

ALAN G. SAWYER, *Associate Professor of Marketing*, B.S., Maine, 1965; M.B.A., Northeastern, 1967; Ph.D., Stanford, 1970.

CHARLES D. SCHEWE, *Assistant Professor of Marketing*, B.A., Michigan, 1965; M.B.A., 1965; Ph.D., Northwestern, 1971.

SIDNEY SCHOEFFLER, *Professor of Marketing*, B.S., New York University, 1945; A.M., Pennsylvania, 1946; Ph.D., New School for Social Research, 1952; C.P.A., New Jersey, 1949.

GEORGE SCHWARTZ, *Associate Professor of Marketing*, B.A., Brooklyn College, 1943; Ph.D., Pennsylvania, 1960.

RICHARD H. SIMPSON, *Associate Professor of Accounting*, B.B.A., Massachusetts, 1958; M.B.A., North Carolina, 1961; Ph.D., 1967; C.P.A., North Carolina, 1964.

FRANK A. SINGER, *Professor of Accounting*, B.S., Indiana, 1948; M.B.A., 1949; D.B.A., 1955.

WENDELL R. SMITH, *Commonwealth Professor*, B.S., Iowa, 1932; M.A., 1935; Ph.D., 1941.

DONALD E. STONE, *Associate Professor of Accounting*, B.S., Lehigh, 1961; M.B.A., Wisconsin, 1952; Ph.D., 1965; C.P.A., Wisconsin, 1965.

SIDNEY C. SUFRIN, *Professor of General Business and Finance*, B.A., University of Pennsylvania; Ph.D., Ohio State, 1940.

WILLIAM B. WHISTON, *Associate Professor of General Business and Finance and Director of the Center for Business and Economic Research*, B.A., Amherst, 1943; B.D., Yale, 1947; B.S., Massachusetts Institute of Technology, 1949; M.S., Cincinnati, 1964; M.A., Harvard, 1967; Ph.D., 1972.

PARKER M. WORTHING, *Associate Professor of Marketing*, B.S., University of Maine, 1962; M.B.A., Michigan State, 1964; Ph.D., 1968.

MAX S. WORTMAN, JR., *Professor of Management*, B.S., Iowa, 1956; Ph.D., Minnesota, 1962.

STANLEY YOUNG, *Professor of Management*, B.A., Washington University, 1949; M.B.A., Pennsylvania, 1951; Ph.D., 1956.

The School of Business Administration is a fully accredited member of the American Association of Collegiate Schools of Business (AACSB). The Ph.D. and two different master's degree programs are offered.

The program of graduate courses in business administration is designed to prepare students for positions of responsibility in business, in organizations that serve business, in government, and in related fields of teaching.

## THE DOCTOR OF PHILOSOPHY DEGREE

The graduate program leading to the degree of Doctor of Philosophy in Business Administration is designed primarily for students interested in a career in college teaching, service, and research. A minimum of three years is normal for the degree. Application requirements are described below.

A minimum ATGSB score of 550 is expected, but a higher score may be necessary depending upon the applicant's previous record. A summary of the requirements for the degree follows:



1. At least two years of formal resident course study involving not less than 48 hours nor more than 72 credit-hours are required.

2. Prerequisites or foundation course work may be required depending upon the student's previous preparation at time of admission. Evaluation of this preparation will be based upon the requirements of a minimum of: 12 credits in business administration; six credits in micro- and macroeconomic theory beyond a six-credit introductory economics requirement; nine credits in mathematics, including finite mathematics, differential and integral calculus; six credits of statistics; and six credits in the behavioral sciences. Individual requirements shall be determined by the Graduate Program Director and the student's adviser.

3. Core requirements for the program include proficiency in the behavioral sciences, research methodology and statistics, and micro- and macroeconomic theory. In addition, until the dissertation proposal has been accepted, the student is required to participate in an ongoing research seminar in business administration.

4. Students are required to take a written qualifying examination measuring ability in the core areas. A common examination is administered three times a year by the graduate faculty.

5. A maximum of 12 hours of non-core doctoral courses may be taken prior to the completion of the qualifying examination requirement. In addition, all core course requirements as well as completion of the qualifying examination requirements must be met within 24 months from the date the student enters the doctoral program.

6. The student selects a field of concentration from among the following alternatives:

- a. Functional Fields.
  - i. Accounting.
  - ii. Finance.
  - iii. Industrial and Personnel Relations.
  - iv. Marketing.
  - v. Operations Management.
- b. General Fields.
  - i. Business and its Environment.
  - ii. Information and Control Systems.
  - iii. Organizational and Administrative Behavior.
  - iv. Quantitative Management Science.

In conjunction with the adviser and the Graduate Program Director, a course plan is developed to achieve the concentration desired. In addition to the selection of a major area of concentration from the alternatives listed above, the student must also designate a minor area consisting of a minimum of nine semester hours. The minor may be selected from graduate courses offered anywhere in the University.

7. Upon completion of at least 30 credits of graduate study beyond the Core requirements, the student shall take a written and oral Preliminary Comprehensive Examination, administered by the Doctoral Adviser and Doctoral Committee.

8. In conjunction with his adviser and committee, the student will develop a doctoral dissertation.

9. A Final Oral Examination, upon completion of the dissertation, is administered by the adviser and the Doctoral Committee.

10. Teaching, or the equivalent experience, is required of all candidates for the Ph.D. in Business Administration.

Fellowships, assistantships, and other financial aid

from the School of Business Administration are not available to foreign students during their first year on this campus. An application from a foreign student must be accompanied by a statement of financial sufficiency.

### MASTER'S DEGREE PROGRAMS

In accordance with the accreditation guidelines of the AACSB, the foundation for master's study within the School consists of basic course work in economics, mathematics, statistics, computer methods, organizational behavior, accounting, finance, marketing, and the social and legal environment. Any baccalaureate degree holder may apply for admission to the master's degree program of the School. Applicants holding the baccalaureate degree in business typically satisfy most of the foundation requirements. Admittees having deficiencies in any of these areas are required to complete appropriate Foundation Courses prescribed from among the following: BA600, 606, 611, 622, 650, 647, 651, 656, and 657.

All master's degree candidates are required to demonstrate proficiency in written English. To this end one faculty member devotes his time. Noncredit course work and writing counseling is available to the student. The writing requirement is aligned with the student's regular course work writing requirements.

Students seeking entry into any graduate course may be required to demonstrate eligibility for such advanced study through a qualifying examination or by other means. Graduate and 600-level prerequisite courses are open only to students meeting the usual admission requirements for graduate study.

A comprehensive examination is required of all students enrolled in master's degree programs of the School. This may be oral or written, depending upon the program involved.

Permission to present a thesis may be granted to qualified candidates enrolled in any of the masters programs. The thesis proposal must be approved by the end of the first semester of full-time graduate study. Up to nine credit hours in lieu of course credit may be allowed for a thesis. An oral comprehensive examination is required upon completion of the thesis.

Description of the requirements for the various master's degree program of the School are set forth below.

### THE MASTER OF BUSINESS ADMINISTRATION DEGREE

The M.B.A. Program is oriented toward the development of general management knowledge and skills. The requirements for this degree follow:

1. Over and above the Foundation requirements noted above, candidates for the M.B.A. degree shall satisfactorily complete 30 semester hours of approved graduate study, 24 of which must be in courses designated as exclusively for graduate students.

2. All candidates shall complete the following courses: BA 711, 756, 722, 751, 706, 742, and 752.

3. At least three electives from among the 500-, 600-, and 700-level offerings of the School are required. Other electives may be chosen with the consent of the student's adviser.

### THE MASTER OF SCIENCE IN BUSINESS ADMINISTRATION DEGREE

This is a specialized degree program having several fields of concentration. The degree requirements in the various concentrations follow:

#### 1. The M.S.B.A./Accounting Program

This program prepares students for careers in public accounting, industry, government, and teaching. It is expected that students completing the program will possess the following attributes:

- a. Ability to intelligently evaluate contemporary research.
  1. Familiarity with sources.
  2. Familiarity with research tools.
- b. Facility for correct written and oral expression.
- c. Professional level of competence in accounting theory.
  1. Appreciation of historical development of accounting thought to serve as a foundation for understanding current and developing accounting theory and practice.
  2. An appreciation of income theory including economic theories of income and alternative accounting valuation models.
  3. An appreciation of the relationship between accounting measurements and management decision models and processes.
- d. An awareness of current accounting practices and the forces that act as influences on them.

In addition to the foundation requirements described above, students not holding an undergraduate degree with a major in accounting shall take courses as prescribed by the School to provide a foundation in accounting appropriate to the student's career interests.

Candidates shall satisfactorily complete 30 semester hours of approved graduate study, 18 of which must be in courses designated as exclusively for graduate students.

The following courses are required of all candidates: BA 703, 704, 706, 712, one course in Organizational Behavior (BA 751 or 807(I), or equivalent), one course in Quantitative Methods (BA 756, 757, 805 (I), or equivalent), and BA 752.

Elective courses are chosen with the consent of the student's adviser. These may be selected so as to lead to specialization in various fields such as the following: managerial accounting, public accounting, information systems, accounting research and teaching, and institutional accounting. With the consent of the student's adviser, special programs can be arranged involving the election of courses in other departments and schools on campus.

Highly qualified non-business majors may be granted privileges of an accelerated program, at the discretion of the School.

The CPA laws in Massachusetts and some other states, permit the holder of the master's degree to substitute the degree for part of the Public Accounting experience required for the certificate.

#### 2. The M.S.B.A./Industrial and Personnel Relations Program

This program prepares students for careers in private and public organizations in personnel management, industrial relations, labor relations, and manpower affairs.

The industrial and personnel relations concentration requires a minimum of 30 semester hours of graduate study.

Prerequisites for the program are those of all master's degree programs in this School. Students must complete these prerequisites before taking related 700-level courses and before completing their master's programs. Substitutions for prerequisite requirements may be made with the consent of the adviser. No thesis is required.

The following courses are required: BA 761, 762, 763, one course in Quantitative Methods (BA 756, 757, 805(I), or equivalent), one course in Behavioral Science (BA 751, 807(I), or equivalent), and BA 752. Three industrial relations electives (nine credits) and two electives in management, economics, sociology, psychology, government, or related fields are chosen with the consent of the student's adviser.

#### 3. The M.S.B.A./Management Science Program

This program is specifically designed for individuals who are interested in the application of quantitative techniques to the problems of business and administration. It is anticipated that persons with undergraduate training in engineering, mathematics, science, business, or economics will find this program appealing.

The number of credits necessary to complete the program is dependent upon previous preparation. Depending on the number of prerequisites already fulfilled, the program may require between 30 and 51 credit hours. Thus, while it is possible to complete the program in a year, as a general rule one should plan to spend three or four semesters.

A key feature of this program is its flexibility in meeting the professional goals of the individual student. The program allows between six and eight elective courses. These electives allow the individual to develop considerable strength in specific disciplines or problem areas.

The following are required courses in the Management Science Program: BA 758, 759, 770, one course in Organizational Behavior (BA 751, 765 or 807(I), or equivalent), and BA 752.

In addition, nine credit hours of electives in Quantitative Analysis and other electives in the area of specialization are required.

An *Operations Research/Management Science Program* is administered jointly by the School of Business Administration and the department of Industrial Engineering. The program does not grant degrees (each School grants its own degrees). It is a formal recognition of long standing cooperation in an area of vital interest to both Schools.

#### 4. The M.S.B.A./Marketing Program

The program prepares students for careers in marketing administration, sales management, product management, advertising management, marketing research, or wholesale/retail enterprise.

The Marketing concentration requires a minimum of 30 semester hours of graduate study. Prerequisites for this program are those of all master's degree programs in the School of Business Administration. *A thesis is required.*

The following courses are also required: BA 722, 723, 724, 725, one course in Quantitative Methods (BA 756, 757, or 805), one course in Behavioral Science (BA 751, or 807), and BA 752. In addition, a six-credit master's thesis is required.

#### 5. The M.S.B.A./Urban and Regional Management Program

The program prepares its graduates for careers in city and state government, community relations departments of business firms, business firms con-



## BUSINESS ADMINISTRATION

cerned with real estate and/or urban problems, research consulting firms, foundations, non-profit service organizations, and educational institutions.

This program of graduate study is designed to be flexible in order to meet the needs of students with different interests and abilities. A core of quantitative methods, behavioral science and management seminars forms the first semester. Thereafter, enough electives are available so that the student may develop skills and understanding in the chosen field. Specialization may be developed in the following areas:

- a. Urban Economic Planning.
- b. Real Estate and Housing.
- c. Research and Analysis.
- d. Transportation Planning & Policies.
- e. Other areas designed in cooperation with the program coordinator.

Sixteen of the 36 hours required for the degree must be in courses designed exclusively for graduate students. All candidates for the degree must:

- a. Complete an independent work-study project approved by the program coordinator *OR*
- b. Present a thesis (six to nine credit hours allowed).

The requirements of the program are: BA 572, 782, 799, one course in Quantitative Methods (BA 756 or 757) and one course in Behavioral Science (BA 751 or 807).

In addition to the above 15 credit hours of required courses, the above-mentioned work-study project (or thesis) is required along with enough specialized electives (18 to 24 credits) to complete a total of 36 credit hours.

### 6. The M.S.B.A./Finance

The M.S.B.A. Finance Program is designed to prepare students for professional careers in business through breadth and specialization in the field of finance. Stress is on financial principles and techniques with applications in financial management, investments, and insurance.

A minimum of 30 semester hours of graduate study are required. Prerequisites for this program are those of all Master's Degree Programs in the School of Business Administration. Thesis writing is encouraged.

The requirements of the program are: BA 706, 708, 709, one course in Quantitative Methods (BA 756, or equivalent), one course in Behavioral Science (BA 751, 807(I), or equivalent), and BA 752.

## GENERAL

The M.B.A. and M.S.B.A./Management Science degree programs are also offered on an evening basis in Pittsfield, Mass.

Questions concerning any of the graduate degree programs of the School should be addressed to: Graduate Program Director, School of Business Administration, University of Massachusetts, Amherst, MA 01002.

## APPLICATION

Application for Graduate Study should be made directly through the Dean of the Graduate School, as described elsewhere in this Bulletin. A complete application consists of (a) the application form, (b) two references, (c) two sets of official transcripts of all college-level work, and (d) an official score report on the Admission Test for Graduate Study in Business (ATGSB). The Graduate Record Examination is not an acceptable substitute for the ATGSB. Information

## GRADUATE SCHOOL

on the ATGSB may be obtained from the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey 08540. Application deadlines are found elsewhere in this Bulletin. Action is taken immediately upon receipt by the Graduate School of a complete application.

Standards for admission are consistent with those described earlier in this Bulletin. A minimum ATGSB score of 450 is required, but a higher score may be necessary depending on the applicant's grade-point-average. Foreign students are not exempt from this requirement. The present master's student average ATGSB score at this school is 524. This examination may be taken more than once.

Fellowships, assistantships, and other financial aid from the School of Business Administration normally are not available to foreign students during their first year of study. An application from a foreign student must be accompanied by a statement of financial sufficiency.

Program ABLE (Accelerated Business Leadership Education) is a 24-month program designed to identify and assist members of minority groups who have the potential to achieve the Master of Business Administration degree. Although there is an apparent need for top level minority managers and administrators to enter the mainstream of American business, our program is more concerned with the development of managers and administrators to service the growing needs of minority businessmen.

Candidates selected for this program must have a bachelor's degree or the equivalent from any college or university of recognized standing. Applicants *must* take the ATGSB (Admission Test for Graduate School of Business) in August or November. Applicants will be judged primarily on the basis of past academic achievement, ATGSB scores, and recommendations. Classes start June 1, therefore the deadline for all application materials (including ATGSB scores) is February 1. Decisions will be made by April 15.

Each person who qualifies for admission under Program ABLE is eligible for a fellowship to pursue the master's degree. The awarding of fellowships is based on need.

Students once selected are required to attend an intensive 12-week summer program on the campus of one of the ABLE consortium member schools. This summer program is designed to concentrate on areas where most students experience difficulties.

Following the summer session, the students return to enter the regular master's program at the School to which they have been admitted.

Further information on Program ABLE may be obtained from Dr. Lawrence Johnson, School of Business Administration.

## ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

### DOCTORAL COURSES IN BUSINESS ADMINISTRATION (B.A.)

(Open to doctoral students only, except by special permission of the Graduate Program Director and the instructor.)

#### 801. PHILOSOPHICAL FOUNDATIONS OF BUSINESS ADMINISTRATION.

Conceptual foundations of business administration in context of social and economic philosophy. Topics include corporate objectives and goal models, theories of organization, and social responsibilities of corporate management.



## UNIVERSITY OF MASSACHUSETTS

### 802. BUSINESS ORGANIZATION AND ADMINISTRATIVE THEORY

Investigation and critique of contemporary theories of organization, administration, and decision, with a view of their scientific support and practicality for increasing rationality, prediction, and control in business administration.

Mr. Finch, Mr. Litterer.

### 803. MANAGEMENT SYSTEMS: THEORY, ANALYSIS, AND DESIGN

Review of systems with stress on normative behavioral systems. Designing, implementing, operating, maintaining, and controlling such systems. The organization viewed as a total system. The student designs a behavioral system as a class project.

Mr. Young.

### 804. DECISION MODELS IN BUSINESS ADMINISTRATION

Application of probability theory and selected topics in mathematics to stochastic and deterministic managerial decision models.

Mr. Kaczka.

### 805. I, II. STATISTICAL ANALYSIS FOR BUSINESS RESEARCH

Analysis of statistical theory and techniques relevant to business research and decision making. First semester: probability and distribution theory; second semester: decision theory and multivariate methods.

Credit, 3-6. Mr. Frederick.

### 806. SEMINAR IN QUANTITATIVE MANAGEMENT SCIENCE

A presentation of journal reports on business topics utilizing a quantitative approach.

Credit, 3-6.

### 807. I, II. SEMINAR IN BEHAVIORAL SCIENCE

Selection of relevant findings in the behavioral and social sciences regarding human organizational behavior and conversion into forms suitable for transmission and application in business administration.

Credit, 3-6. Mr. Finch, Mr. Litterer.

### 808. ADVANCED TOPICS IN BUSINESS ADMINISTRATION

An advanced topic section is available in each general or functional field of study to facilitate investigation of current literature and research effort in these areas.

Credit, 1-6.

### 809. INTERNATIONAL ASPECTS OF BUSINESS ADMINISTRATION

The basis of international division of labor, the history of international business policy, and the cultural differences that affect the management of international business enterprises.

### 810. TUTORIAL STUDY IN BUSINESS ADMINISTRATION

Individualized secondary or applied research in special areas of guided doctoral-level investigation. Permission of instructor required.

Credit, 3-5.

### 811. BUSINESS HISTORY

American business institutions as they have evolved through time. The impact of social and economic processes on their development and operations.

### 812. JURISPRUDENCE AND BUSINESS

Social-scientific and philosophical theories of law; the systems, functions, processes and limits of law, applications to the business organization in its external and internal affairs.

### 821, 822. ADVANCED TOPICS IN MANAGEMENT SCIENCE I, II

Selected topics of current significance in mathematical, statistical, computer, and behavioral approaches to management and administration. Either semester may be elected independently.

Credit, 3-6. Mr. Balintfy.

## BUSINESS ADMINISTRATION

### 823. MATHEMATICAL PROGRAMMING

Application of linear, quadratic, integer, and dynamic programming models and algorithms in pricing and resource allocation by firms; sensitivity analysis and parametric programming.

Mr. Balintfy.

### 831. LONG RANGE BUSINESS PLANNING

Advanced and intensive study of long-range planning practices in business firms. Emphasis on the planning process in relation to other managerial processes on the most recent methods of reducing risk and uncertainty in long-term planning strategies.

Mr. Michael.

### 832. DYNAMICS OF CORPORATE ORGANIZATION

Changes in corporate organization as adaptive responses to challenges and constraints imposed upon the corporation by variations in endogenous and exogenous factors.

Mr. Michael.

### 841. MANAGEMENT INFORMATION THEORY

Theories and applications of management information system in the context of total servomechanism system concept. Topics include the generation, organization, transformation, dissemination, codification, discrimination, and economics of information.

Mr. Hare.

### 842. MANAGEMENT CONTROL SYSTEMS

The function of total systems theory which provides direction in attaining planned objectives of the system. Various theories of control and measurement in relation to organization resources and information requirements.

Mr. Hare.

### 851. THEORY AND SCIENCE IN MARKETING

The state of marketing knowledge; the content and validity of marketing thought, theories, and other substantive and methodological contributions to the development of marketing science.

Mr. Frederick.

### 852. SOCIAL SCIENCE ISSUES IN MARKETING

Materials from the various social science disciplines that have been used to expand understanding of marketing; discernment of areas of ignorance about marketing involving social-science-related marketing phenomena.

### 861. ADVANCED ACCOUNTING THEORY

The origin, development, and current status of accounting theory and its relationship to other disciplines and the needs of report users. Independent research required.

Mr. Backer.

### 862. MANAGEMENT INFORMATION PROBLEMS

Methods of research for establishing: 1) The behavioral impact of incremental differences in information. 2) The determinants of useful information for problem solving and their normative implications. Existing literature examined.

Mr. Backer.

### 871. MICRO THEORY OF FINANCE

Optimum financial policies and decisions of nonfinancial firms. Theory of competition and optimum asset management of financial firms.

Prerequisite, 12 hours in finance and economics. Mr. Kumar.

### 872. FINANCIAL INTERMEDIARIES AND MARKETS

Financial intermediaries and financial markets and the development of a theory of financial intermediation as it relates to growth, employment, and price levels.

### 881. PRODUCTION MANAGEMENT ANALYSIS

Application of mathematical and statistical methods and models for production management decisions and problem analyses and for managerial planning and control.

Mr. McGarrah.

### 882. PRODUCTION MANAGEMENT POLICY

Formulation and administration of production and operations management policies with reference to developing an effective total business strategy.

Mr. McGarrah.

## BUSINESS ADMINISTRATION

### 891. MANPOWER PLANNING.

Investigation and comparative evaluation of systems of manpower planning both at the corporate and national levels including systematic manpower inventory appraisal.

Mr. Wortman.

### 892. LEGAL ASPECTS OF INDUSTRIAL AND LABOR RELATIONS.

The historical evolution of national labor policy from its English origin in 1349 through modern experiences. Common law, statutory, and constitutional developments of labor policy examined against a historical, political, and economic background.

### 900. DOCTORAL DISSERTATION.

*Credit, 18.*

## MASTER'S LEVEL COURSES IN BUSINESS ADMINISTRATION (BA)

(Open to graduate students only, for major or elective credit. Students seeking entry may be required to demonstrate eligibility for advanced study through a qualifying examination or by other means.)

### 700. PROBLEMS IN BUSINESS ADMINISTRATION.

Independent study and research on selected problems in business administration.

Permission of instructor and the dean required.

*Credit, 3-6 each semester.*

### 702. ACCOUNTING SYSTEMS.

Accounting systems and their relationship to other business information systems.

Mr. Burch, Mr. Krzystofik.

### 703. ACCOUNTING THEORY.

Agreed and controversial criteria for collecting and reporting financial information. Examination of the professional literature.

Mr. Backer, Mr. Simpson.

### 704. CONTEMPORARY ACCOUNTING ISSUES.

Investigation and analysis of selected contemporary issues in accounting with presentation of individual findings through discussion and reports.

Mr. Backer, Mr. Gosman.

### 705. SEMINAR IN ACCOUNTING.

Study and evaluation of current literature in accounting and related fields.

Mr. Dennler, Mr. Stone.

### 706. FINANCIAL MANAGEMENT.

Internal financial problems of firms; capital budgeting, cost of capital, dividend policy, rate of return, and the financial aspects of growth. Readings and cases.

Mr. Barges, Mr. Ludtke.

### 707. GROWTH, MERGERS, AND ACQUISITIONS.

An analysis of the financial problems and implications of corporate growth. Mergers and acquisitions as instruments for achieving growth. Text and cases.

Prerequisite, BA 706 or equivalent.

Mr. Barges.

### 708. SEMINAR IN FINANCE.

Recent developments in areas such as investments, financial institutions, capital markets, and corporation finance. Emphasis on the use of theoretical as well as applied analytical techniques for decision making in these areas.

### 709. INVESTMENTS.

Development of a general theory of investment management and its application to individual and institutional investors; computer portfolio management.

### 711. ACCOUNTING IN MANAGEMENT.

Production and use of accounting and other quantitative data for decision making related to planning and control.

Mr. Backer, Mr. Stone.

## GRADUATE SCHOOL

### 712. ADVANCED MANAGERIAL ACCOUNTING.

An advanced course in the use of accounting and other quantitative measurements for business planning, decision-making, and performance-evaluation.

Prerequisite, BA 711 or permission of instructor.

### 722. MARKETING MANAGEMENT.

Marketing concepts of planning, organization, control, and decision-making from the viewpoint of the business executive. Stress on tools available for analysis and control of marketing activities.

Prerequisites, BA 406, 411, 422, 440, 456, and 457, or equivalents.

Mr. Paul, Mr. Worthing.

### 723. MANAGEMENT SCIENCE IN MARKETING.

An analytical examination of the application of management-science techniques to marketing phenomena. Examines the relationship of the behavioral and quantitative sciences to marketing.

Prerequisites, BA 722 and 756, or permission of instructor.

### 724. RESEARCH METHODS IN MARKETING.

Applicability and utilization of quantitative research techniques to marketing problems and processes.

Prerequisites, BA 722 and 756, or permission of instructor.

Mr. Frederick, Mr. Monroe.

### 725. PERSPECTIVES ON CONSUMER BEHAVIOR.

The social, psychological, and economic roles of the consumer in decision-making and market behavior. The external and internal determinants of buyer behavior.

Prerequisite, BA 422 or equivalent.

### 726. INTERNATIONAL MARKETING MANAGEMENT.

The impact of political, social, economic and cultural forces of divergent societies upon the managerial decision-making process in international marketing operations. Problems associated with the design of marketing strategy.

Prerequisite, BA 722 or equivalent.

Mr. Liander.

### 730. SEMINAR IN MARKETING PROGRAMS AND ISSUES.

Selected areas of pronounced and current interest in the field of marketing. Topics include marketing and public policy, buyer-behavior research, and marketing communications.

Prerequisite, BA 722 or equivalent.

Mr. Buell, Mr. Paul.

### 735. RISK MANAGEMENT.

Analysis of risks to which a business is exposed, determination of methods of providing protection, including loss-prevention techniques, risk retention, self-insurance, and use of commercial insurance. Case and field studies.

Mr. Osborn.

### 740. MANAGERIAL ECONOMICS.

Application of microeconomic analysis to typical business decisions such as: cost and profit analysis; demand and pricing, investment analysis, and capital budgeting; and the uses of economic forecasting in business decisions.

Prerequisite, one semester intermediate microeconomic theory.

### 742. OPERATIONS MANAGEMENT.

Analysis of production problems and solution techniques, applicable in industrial analysis.

### 745. DYNAMIC MODELLING OF COMPLEX SYSTEMS.

The student learns the principles of feedback behavior and system dynamics, attaining sufficient competence in six weeks to build computer simulation models of such complex organizational systems as industrial, educational, social, and ecological, and to analyze their dynamic behavior. The course can be taken by graduate students in social as well as natural sciences.

Mr. Sahin.

### 746. BUSINESS LOGISTICS.

The total cost concept in the management of a business enterprise. Problems in inventory determination, location theory and practice, transportation and warehousing alternatives with the objective of maximizing customer service at least cost. A case and problem approach.

Mr. Rivers.

UNIVERSITY OF MASSACHUSETTS

**751. ORGANIZATIONAL BEHAVIOR**  
For students who want to develop professional skills dealing with organizational and interpersonal factors related to effective organizational performance. Emphasis on the impact of managerial actions on organizational behavior.  
Prerequisite, BA 451 or equivalent.

**752. BUSINESS POLICY.**  
Capstone course requiring application of knowledge, theories, and techniques derived from previous courses, using integrative cases and empirical observations to formulate improved policies and plans.

**754. MANAGEMENT SCIENCE TECHNIQUES IN ENVIRONMENTAL PLANNING.**  
Introduction to mathematical and computer methods and techniques useful in the description and control of environmental systems. Large scale computer models used to demonstrate the technique in analysis of selected representative problems.  
Mr. Kaczka.

**755. GAME THEORY.**  
Zero and non-zero games including theory, solution technique; experimental literature based upon game theory.  
Prerequisites, BA 758 and BA 759

**756. QUANTITATIVE METHODS III**  
Statistical methods employed in collection, analysis, and interpretation of data. Business applications of sampling, analysis of variance, experimental design, regression analysis, and forecasting models.

**757. QUANTITATIVE METHODS IN BUSINESS ADMINISTRATION.**  
Application of probability theory (discrete and continuous) stochastic process, linear, quadratic and dynamic programming, waiting lines, sequencing, and computer simulation models to selected problems in management science.  
Mr. Kaczka.

**758. DETERMINISTIC MODELS IN MANAGEMENT SCIENCE.**  
Introduction to deterministic models and techniques relevant to business problems. Topics include Kuhn-Tucker theory, mathematical programming, difference equations and discrete and continuous maximum principles.

**759. PROBABILISTIC MODELS OF MANAGEMENT SCIENCE.**  
Introduction to probabilistic models and statistical techniques relevant to the understanding of business problems.

**760. WORK STANDARDS AND JOB CLASSIFICATION.**  
The principles and basic requirements in evaluating and classifying job positions, in establishing and applying production standards, and in work simplification.

**761. SEMINAR IN PERSONNEL MANAGEMENT.**  
Current practices and major problems of personnel administration through use of the case method and role-playing techniques.  
Prerequisite, personnel management course. Mr. Young.

**762. MANAGEMENT OF INDUSTRIAL RELATIONS**  
Organization and administration of the industrial relations function within business firms. Emphasis on alternative approaches to management rights and responsibilities in labor relations.  
Prerequisite, Mgt 644. Mr. Conlon.

**763. SEMINAR IN INDUSTRIAL RELATIONS.**  
Analysis of the major current problems encountered by business management in the negotiation and administration of labor relations agreements. A major research study is required.  
Mr. Conlon.

**765. BEHAVIORAL-SCIENCE MODELS IN BUSINESS.**  
Behavioral-science theories and models as they apply to the behavioral problems of enterprises.

BUSINESS ADMINISTRATION

**770. MANAGEMENT SCIENCE IN PLANNING AND CONTROL.**  
Application of management science to problems of design testing and evaluation of facilities usage, manpower organization, and information procedures actually employed by business firms or government agencies.  
Mr. Hare, Mr. McGarrah

**776. INTERNATIONAL FINANCE.**  
Introduction to foreign money and capital markets and international financial institutions; financial planning for corporations with overseas operations; analysis of sources and uses of corporate funds abroad; criteria for choice among alternative foreign investments. A text/case approach.  
Prerequisites, introductory level courses in corporate finance and financial institutions and markets, or permission of instructor.  
Mr. Ludtke.

**780. RESEARCH METHODS.**  
Fundamental concepts of the purpose and practice of scientific research, including formulation of research design and objectives, collecting, processing, and analyzing socio-economic data.  
Prerequisite, BA 457 or equivalent.

**781. SYSTEMS THEORY & URBAN PROBLEMS.**  
The fundamentals of systems theory and its application to urban problems. Various social-economic urban problems, and how systems theory can be utilized in effective solutions.

**782. CURRENT ISSUES IN URBAN AND REGIONAL MANAGEMENT**  
An analysis of the dimensions of urban growth and change. Reasons behind and problems arising from economic growth and stagnation of urban areas.  
Prerequisite, economics course.

**783. URBAN BUDGETING AND PUBLIC FINANCE**  
The theory, techniques, and administration of public finance and budgeting, as applied within an urban and regional framework.  
Prerequisite, economics course.

**784. REAL ESTATE FINANCE**  
A problem-oriented course; financial practices, institutions, and methods of analysis related to real-estate investment. Topics include investment theory, taxation, and government programs.  
Prerequisite, Gen Bus 201 and 270 or equivalents.

**785. HOUSING ANALYSIS**  
The urban housing market; government housing programs and practices of private enterprises analyzed and evaluated. A housing-market model is used for analysis. All students required to complete a project  
Prerequisite, Gen Bus 270 or equivalent.

**787. SEMINAR IN URBAN AND REGIONAL MANAGEMENT**  
Integrates concepts gained in prior courses in areas of urban studies, sociology, political science, economics, and business administration.  
Prerequisite, advanced standing in a graduate urban studies oriented curriculum.

**788. LAND AND THE DEVELOPMENT OF COMMUNITIES.**  
The urban development process from a business and economic viewpoint. Topics include economic, legal, social, political, and administrative aspects of the real estate market  
Prerequisite, economics course.

**799. SEMINAR IN BUSINESS ADMINISTRATION**  
The relationship of business and management to the environment in which they operate.

**800. MASTER'S THESIS** Credit, 9.



## BUSINESS ADMINISTRATION

### MASTER'S FOUNDATION COURSES

#### 600. COMPUTER METHODS FOR BUSINESS.

Current and potential management usage of computers, basic computer programming, and computer-based information systems in management decision-making.

#### 606. BUSINESS FINANCE.

Survey of principles and practices of financing business. Not open to students with undergraduate work in corporation finance.  
Prerequisite, elementary accounting (through corporate accounts.)

#### 611. INTRODUCTION TO ACCOUNTING.

Principles underlying preparation of financial statements and the development and application of accounting data for planning and control.  
Mr. Dennler.

#### 622. MARKETING ENVIRONMENT.

Dimensions of change in social, economic, and political factors, related to efforts surrounding establishment and attainment of marketing policy and corporate objectives.  
Mr. Buell, Mrs. Barber.

#### 650. MANAGERIAL ECONOMICS.

Microeconomic analysis and application to business decisions such as: cost and profit analysis; demand and pricing; investment analysis and capital budgeting; and economic forecasting.

#### 647. LAW AND GOVERNMENT.

An introduction to nature, functions, and limitations of state and non-state law-government systems, industrial jurisprudence, and politico-legal environment of business.

#### 651. ADMINISTRATIVE THEORY.

Analysis of fundamental psychological and sociological phenomena that underlie group behavior; exploration of organization processes including leadership, communication, and change; analysis of classical decision and system theory.

#### 656. QUANTITATIVE METHODS I — CALCULUS.

Business applications of algebra including ratios, proportions, logarithms, partial fraction series, limits, convergence, combinations, and permutations. Basic concepts of differential and integral calculus, and matrix algebra.  
Prerequisite, one semester of college algebra.

#### 657. QUANTITATIVE METHODS II — STATISTICS.

Laws and theories of probability and statistics, with applications in business and economics. Topics include probability models, sampling distribution, estimation, hypothesis testing, and decision theory.  
Prerequisite, BA 656 or equivalent.

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

#### ACCOUNTING (ACCTG)

#### 510. BUSINESS APPLICATIONS OF THE COMPUTER.

Intermediate and advanced computer programming applied to business problems. The COBOL language treated in depth, related to accounting problems. Also surveys the Computer application in areas such as simulation, PERT, and business gaming.  
Prerequisites, Acctg 110 or COINS 121 or equivalent.

#### 563. LAW IV.

Limited to Accounting majors. Also listed under General Business and Finance.

#### 620. FINANCIAL REPORTING III.

Consolidation problems of merged firms. Application of interest to accounting problems. Both general price-level and specific price change problems. Problems of foreign operations and firms in financial difficulty.  
Prerequisite, Acctg 221 or equivalent.  
Ms. Motekat, Mr. Simpson.

## GRADUATE SCHOOL

#### 635. INVENTORY CONTROL.

Mathematical modeling applied to control of inventory investments. Emphasis on the recognition of relevant costs for the development and solution of appropriate models.  
Prerequisites, BA 759 or permission of instructor.

#### 640. AUDITING AND CONTROL.

Basic principles of auditing with emphasis on theory, types of audits, duties and responsibilities of the auditor, audit programs, and methods of internal control. Emphasis on the responsibilities of both the independent and internal auditor.  
Prerequisites, Acctg 221 or equivalent and a Cost Accounting course.  
Mr. Krzystofik.

#### 671. ADVANCED FEDERAL TAX PROCEDURES.

Emphasis on corporations, partnerships, estates and trusts, gifts and estate taxes, tax planning and research.  
Prerequisite, Acctg 370 or equivalent.

Mr. Anderson, Mr. Fitzgerald.

#### 680. C.P.A. PROBLEMS.

Solution of problems for CPA examinations. Topics include: proper treatment of assets, liabilities, and ownership equity; partnerships; consolidations; funds and cash flow; cost accounting and management uses of accounting information; and governmental accounting.  
Prerequisite, Acctg 620 or equivalent.

Mr. Lentilhon, Mr. O'Connell.

#### 682. INTERNATIONAL ACCOUNTING.

Current accounting principles and practices in foreign countries. Includes accounting problems encountered by multinational corporations and trends towards the establishment of international accounting and auditing standards.  
Prerequisite, Acctg 221 or equivalent, or permission of instructor.  
Ms. Motekat.

### GENERAL BUSINESS AND FINANCE (GB FIN)

#### 504. MODELS OF FINANCIAL ANALYSIS AND MANAGEMENT.

An analytical approach to financial management. Emphasis on theoretical topics of financial decision-making. Through the use of mathematical, statistical, and computer simulation methods, various financial decision-making models are made.  
Prerequisites, Gen Bus 201 and elementary knowledge of mathematics, statistics, and programming.  
Mr. Kumar.

#### 512. TOPICS IN FINANCIAL INSTITUTIONS AND MARKETS.

Intensive study of selected topics relating to financial institutions and markets with emphasis on management implications.  
Prerequisite, Fin 210 or Econ 211.

#### 521. THEORY OF INVESTMENT ANALYSIS.

Factors affecting investment values of securities, and methods used in their analysis.

#### 522. THEORY OF INVESTMENT PROCESSES.

An in-depth study of portfolio analysis and stochastic processes in security markets. Emphasis on quantitative solution techniques and testing procedures.  
Prerequisites, Fin 220 and 221 or permission of instructor.

#### 545. METROPOLITAN TRANSPORTATION.

Analysis of economic, social, and technological developments on demand and supply factors for the movement of people and goods within urban areas. Determination of the optimal mix of modal facilities to maximize the total transport resources.  
Prerequisite, Gen Bus 240 or permission of instructor.  
Mr. Rivers.

#### 561. LAW II.

Sales, negotiable instruments and secured transactions; their economic functions and consequences.  
Prerequisite, Gen Bus 260.

## UNIVERSITY OF MASSACHUSETTS

### 562. LAW III.

Economic functions and consequences of agency, partnerships and corporations.

### 563. LAW IV.

Legal problems most commonly encountered by certified public accountants with attention to the subjects currently being included in C.P.A. examinations.

Prerequisite, Gen Bus 260. Limited to Accounting majors.

### 564. LAW OF URBAN DEVELOPMENT

Legal problems generated by the changing urban environment. Topics include the law of race relations, poverty and welfare, land use planning, urban and regional planning.

Prerequisite, Gen Bus 260 or equivalent. Mr. Bonsignore.

### 569. (I), 570 (II). CITY PLANNING.

(Reg Pl 573, 574).

The historical and legal aspects of land use and regional development, and a critical examination of planning techniques used in guiding the physical growth of communities.

Credit, 3 each semester.

### 573. INTRODUCTION TO SIMULATION METHODS (IE 573).

The principles and methods of computer simulation. Each student expected to construct, test, and run a complex simulation model.

Mr. Kaczka.

### 658. QUEUEING-THEORY MODELS.

Development and application of models of waiting lines, including single- and multiple-channel and single- and multiple-stage queues for various priorities and queue disciplines.

Prerequisites, BA 758 and 759 and permission of instructor.

### 659. TIME-SERIES ANALYSIS.

Analysis of time-series and dynamic models for use in forecasting and control of business and economic systems.

## MANAGEMENT (MGT)

### 510. MANAGERIAL APPLICATIONS OF COMPUTER PROGRAMMING.

Intermediate and advanced computer programming. Emphasis on problems in accounting and management information systems.

Prerequisite, Mgt 110 or permission of instructor.

### 534. WAGE AND SALARY ADMINISTRATION.

Objectives, procedures, and problems involved in establishment and administration of operative and executive compensation plans.

Mr. Wortman.

### 641. MANAGEMENT DECISION SIMULATION.

Participation in management of a firm in a simulated industry. Students, organized into management teams, apply their knowledge of business administration and economics in a competitive struggle for profit and market position.

### 644. MANAGEMENT-UNION RELATIONS I.

Comparison of union-management objectives, functions, and structures including scope and impact of union penetration into areas of managerial authority.

Mr. Conlon, Mr. Wortman, Mr. Carlisle, Mr. Bornstein.

### 645. MANAGEMENT-UNION RELATIONS II.

Problems in the interpretation and administration of collective-bargaining agreements studied by use of the case method of analysis.

Prerequisite, Mgt 644 or permission of instructor.

Mr. Conlon, Mr. Wortman, Mr. Carlisle, Mr. Bornstein.

## CHEMICAL ENGINEERING

# Chemical Engineering

## GRADUATE FACULTY

JOHN W. ELDRIDGE, *Professor and Head of the Department of Chemical Engineering*, B.S., Maine, 1942; M.S., Syracuse, 1946; Ph.D., Minnesota, 1949.

LELAND H. S. ROBLEE, JR., *Professor and Graduate Program Director*, B.S., Purdue, 1949; M.S., 1956; Ph.D., 1958.

KENNETH D. CASHIN, *Professor*, B.S., Worcester Polytechnic Institute, 1947; M.S., 1948; Ph.D., Rensselaer Polytechnic Institute, 1955.

DAVID C. CHAPPELEAR, *Adjunct Associate Professor*, B.E., Yale, 1953; Ph.D., Princeton, 1960.

JAMES M. DOUGLAS, *Professor*, B.S., Johns Hopkins, 1954; Ph.D., Delaware, 1960.

ROBERT S. KIRK, *Associate Professor*, B.S., Illinois Institute of Technology, 1943; M.S., Illinois Institute of Technology, 1943; Ph.D., University of Wisconsin, 1948.

JAMES R. KITTRELL, *Associate Professor*, B.S., Oklahoma State University, 1962; M.S., University of Wisconsin, 1963; Ph.D., 1966.

ROBERT L. LAURENCE, *Professor*, B.S., Massachusetts Institute of Technology, 1957; M.S., Rhode Island, 1960; Ph.D., Northwestern, 1965.

ROBERT W. LENZ, *Professor*, B.S., Lehigh University, 1949; M.S., Institute of Textile Technology, 1951; Ph.D., State University of New York, 1956.

E. ERNEST LINDSEY, *Professor*, B.S., Georgia Institute of Technology, 1936; Ph.D., Yale, 1940.

THOMAS J. McAVOY, *Associate Professor*, B.S., Brooklyn Polytechnic Institute, 1961; Ph.D., Princeton, 1964.

STANLEY MIDDLEMAN, *Professor*, B.S., Johns Hopkins, 1958; D.Eng., 1961.

W. LEIGH SHORT, *Professor*, B.S., University of Alberta, 1956; M.S., 1957; Ph.D., University of Michigan, 1962.

MARCEL VAN PEE, *Professor*, B.S., M.S., University of Louvain, Belgium; Ph.D., 1940.

The graduate program in chemical engineering emphasizes advanced study in engineering fundamentals rather than specific technological applications. To be admitted to full graduate status in the field, either of the following requirements should be met:

1. Applicant must have Bachelor's degree in chemical engineering from a recognized school, or

2. Applicant must show satisfactory academic training or demonstrate proficiency in these subjects as a minimum:

Mathematics: through Calculus.

Chemistry: through Organic and Physical.

Engineering Mechanics: Statics, Strength of Materials, Dynamics.

Chemical Engineering: Stoichiometry, Unit Operations.

Thermodynamics (including thermodynamics of chemical change).

Electrical Engineering: Elements of Circuits and Machines.

## CHEMICAL ENGINEERING

### REQUIREMENTS FOR THE PH.D. DEGREE

In the Chemical Engineering Department, the Ph.D. candidate is required to fulfill the foreign language requirement or to successfully complete (with a grade of B or better) Eng 634, Advanced Technical Writing. The Department does not impose any other requirements beyond those established by the Graduate School.

### REQUIREMENTS FOR THE M.S. DEGREE

1. Ch E 800, Thesis, six to 10 credits (may be research or design). If a student elects a nonexperimental thesis, he must demonstrate experimental proficiency by other evidence such as from industrial experience.

2. At least 12 credits of Chemical Engineering 700-level courses. Ch E 662 may also be used toward meeting this requirement (*i.e.*, in lieu of three of these 12 credits).

3. Additional graduate-credit courses, chosen according to the student's interests from the fields of engineering, science, mathematics, and the humanities, to constitute the total requirement of 30 credits for the M.S. degree.

4. University-wide requirements as described in the front section of this *Bulletin*.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

700. SPECIAL PROBLEMS. *Credit, 1-3.*

#### 701. CHEMICAL ENGINEERING THERMODYNAMICS I.

Review of the fundamental laws of thermodynamics, P-V-T relations of fluids, thermodynamic functions, fluid flow, compression and expansion of gases, liquefaction and separation of gases.

Prerequisite, Ch E 126 or equivalent.

Mr. Roblee.

#### 702. CHEMICAL ENGINEERING THERMODYNAMICS II.

Phase equilibria and chemical reaction equilibria and their applications in chemical processing.

Prerequisites, Chem 586 and Ch E 701.

*Credit, 2.* Mr. Vanpee.

#### 703. CHEMICAL ENGINEERING ANALYSIS III.

Mathematical analysis of chemical engineering problems continued. Advanced matrix techniques, perturbation analysis, and analytical solutions to partial differential equations.

Prerequisite, Ch E 662.

Mr. Douglas.

#### 705. CHEMICAL REACTOR DESIGN.

Principles of chemical reaction kinetics and their application to industrial chemical processes. Systems homogeneous and heterogeneous, batch and flow, catalyzed and uncatalyzed, isothermal and adiabatic.

Prerequisites, Chem 586, Math 186 or 541 or equivalent.

Mr. Kirk.

#### 706. ADVANCED KINETICS AND REACTOR DESIGN.

Topics from the recent literature including reactions in gradients, catalysis and optimization of chemical reactors by methods of dynamic programming.

Prerequisites, Ch E 705 and Ch E 361 or equivalent.

Mr. Kirk.

## GRADUATE SCHOOL

#### 707. ADVANCED PROCESS CONTROL.

Theory of closed loop control. Use of Laplace transforms and transfer functions; stability analysis, root-locus, Bode diagrams; frequency response and time response in controller design.

Prerequisite, Ch E 376 or equivalent.

Mr. McAvoy.

#### 708. PROCESS DYNAMICS.

Translating process performance into mathematical form, application to control system design. Fluid systems, thermal systems, mass transfer systems (distillation, drying), reaction kinetics.

Prerequisite, Ch E 707.

Mr. Douglas.

#### 710. APPLIED OPTIMIZATION IN CHEMICAL ENGINEERING.

Topics include non-linear programming, (Kuhn-Tucker theorem, quadratic programming), geometric programming, calculus of variations, dynamic programming, Pontryagin's Maximum Principle.

Prerequisite, Ch E 688.

Mr. Novak.

#### 711. CHEMICAL ENGINEERING FLUID MECHANICS.

Introduction to advanced work in chemical engineering fluid mechanics. Viscosity, momentum balances (Navier-Stokes equation), friction, turbulence, the motion of suspended solids in fluids, and non-Newtonian fluids.

Prerequisite, Ch E 256.

Mr. Middleman.

#### 712. CHEMICAL ENGINEERING HEAT TRANSFER.

Introduction to advanced work in heat transfer as applied to chemical engineering. Thermal diffusivity; energy balances; analytical, graphical, and numerical solutions to steady and transient problems; convection and radiation.

Prerequisite, Ch E 711.

*Credit, 2.* Mr. Roblee.

#### 713. ANALOG-HYBRID SIMULATION IN CHEMICAL ENGINEERING.

Topics in analog-hybrid simulation useful to students beginning research. Linear and non-linear components, magnitude and time scaling, digital logic, hybrid operation.

Mr. Novak.

#### 714. POLYMER RHEOLOGY.

Definition and measurement of rheological properties; continuum mechanics and constitutive equations; molecular theories of polymer deformation; correlation and interrelation of material functions. Relation of the various approaches taken in describing the viscous and viscoelastic properties of polymers, evaluation of the utility of these approaches, and indication of the role of modern rheology in the characterization and processing of polymers.

Prerequisite, Ch E 711.

Mr. Middleman.

#### 715. COMBUSTION PHENOMENA.

Fundamentals of combustion. Combustion thermodynamics, Rankin-Hugoniot relations, propagation of explosions, laminar flames, turbulent flames, detonations, radiation processes, kinetics of combustion.

Prerequisites, Ch E 358 and 380.

Mr. Vanpee.

#### 716. MASS TRANSFER.

A unified treatment of mass transport phenomena, emphasizing scientific principles. Diffusional phenomena, convective mass transfer and application of integral averaging techniques to mass transfer.

Prerequisite, Ch E 711.

*Credit, 2.* Mr. Laurence.

#### 731. ADVANCED MASS TRANSFER.

Mass transfer with emphasis on theory of diffusion. Molecular diffusion, multicomponent diffusion, convective mass transfer, diffusion with chemical reaction and chromatographic separations.

Prerequisites, Ch E 662 and 716.

Mr. Laurence.

#### 741. ADVANCED PROCESS DESIGN I.

Solution of advanced process design problems which require the use of principles covered in previous courses. The problems may be conceptual designs, economic decision-making in process design or engineering design calculations for a specific process.

Prerequisites, Ch E 256 and 382.

Mr. Short.



## UNIVERSITY OF MASSACHUSETTS

## CHEMISTRY

### 800. MASTER'S THESIS.

A theoretical or experimental study of some chemical engineering problem. Credit determined by the work done, and by agreement with the Department and the Graduate Thesis Committee. *Credit, 6-10.*

### 801. ADVANCED TOPICS IN CHEMICAL ENGINEERING.

An in-depth exploration of the advanced aspects of an area pertinent to chemical engineering. *Credit, 1-3.*

Prerequisites, Ch E 662, 712, and 716.

### 802. ADVANCED TOPICS IN TRANSPORT PHENOMENA

An in-depth exploration of a particular aspect of advanced transport phenomena. *Credit, 1-3.*

Prerequisites, Ch E 662, 712, and 716.

*Credit, 1-3.* Mr. Roblee.

### 803. ADVANCED TOPICS IN THERMODYNAMICS.

An intensive consideration of current literature and research in a particular area of thermodynamics. *Credit, 1-3.*

Prerequisite, Ch E 702.

*Credit, 1-3.* Mr. Short.

### 804. ADVANCED TOPICS IN KINETICS.

Selected topics from the current literature. *Credit, 1-3.*

Prerequisite, Ch E 705.

*Credit, 1-3.* Mr. Kirk.

### 805. ADVANCED TOPICS IN PROCESS DYNAMICS AND CONTROL.

Topics from the current literature, discussed in depth. *Credit, 1-3.*

Prerequisite, permission of instructor.

*Credit, 1-3.* Mr. Douglas.

### 806. ADVANCED TOPICS IN CHEMICAL ENGINEERING ANALYSIS.

For advanced graduate students in chemical engineering. Application of mathematics to problems in chemical engineering. Specific topics vary according to instructor and student interests. *Credit, 1-3.*

Prerequisites, Ch E 662, 703 or permission of instructor.

*Credit, 1-3.* Mr. McAvoy.

### 807. ADVANCED PROCESS DESIGN II.

Continuation of Advanced Process Design I. Emphasis on more complex designs and the uses of mathematical models or optimization techniques in the solution of these design problems. *Credit, 1-3.*

Prerequisites, Ch E 256, 257, and 688.

*Credit, 1-3.* Mr. Short.

### 900. DOCTORAL DISSERTATION.

A theoretical or experimental study of a chemical engineering problem. Credit determined by the work done and by agreement with the Department and the Graduate Thesis Committee. *Credit, 18.*

*Credit, 18.*

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

(For either major or minor credit)

### 661. CHEMICAL ENGINEERING ANALYSIS I.

Application of mathematical techniques to chemical engineering problems. Emphasis on analysis of problems and the devising of satisfactory mathematical models. Machine computation with digital and analog devices. *Credit, 3.*

Prerequisites, Ch E 256 and Math 256.

*Credit, 3.* Mr. Roblee.

### 662. CHEMICAL ENGINEERING ANALYSIS II.

Mathematical analysis of chemical engineering problems continued. Topics include: matrix methods, vector analysis, calculus of finite differences, numerical solution of ordinary and partial differential equations, complex variables and Laplace transformations. Emphasis on applying these techniques to real chemical engineering processes and on the physical and mathematical interpretation of the results. *Credit, 3.*

Prerequisite, Ch E 661.

*Credit, 3.* Mr. Novak.

### 663, 664. SURVEY OF NUCLEAR ENGINEERING I, II.

Introduction to the principles of nuclear physics and a survey of problems involved in the design and operation of nuclear reactors. Heat transfer, shielding, metallurgy, controls, waste disposal, and health physics. *Credit, 3 each semester.*

Two lectures, one laboratory period per week each semester.

Prerequisite, two semesters of physics and mathematics through integral calculus.

*Credit, 3 each semester.* Mr. Marcus.

*Credit, 3 each semester.* Mr. Marcus.

*Credit, 3 each semester.* Mr. Marcus.

*Credit, 3 each semester.* Mr. Marcus.

*Credit, 3 each semester.* Mr. Marcus.

*Credit, 3 each semester.* Mr. Marcus.

*Credit, 3 each semester.* Mr. Marcus.

*Credit, 3 each semester.* Mr. Marcus.

*Credit, 3 each semester.* Mr. Marcus.

*Credit, 3 each semester.* Mr. Marcus.

*Credit, 3 each semester.* Mr. Marcus.

### 670. APPLIED POLYMER SCIENCE.

A survey of the methods of preparing important synthetic polymers, and their properties and applications. *Credit, 3.*

Prerequisite, undergraduate organic and physical chemistry. *Credit, 3.*

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

*Credit, 3.* Mr. Lenz.

## Chemistry

### GRADUATE FACULTY

WILLIAM E. McEWEEN, *Professor and Head of the Department of Chemistry*, B.A., Columbia, 1944; M.A., 1945; Ph.D., 1947.

GEORGE R. RICHASON, JR., *Professor and Associate Head of the Department of Chemistry*, B.S., Massachusetts, 1937; M.S., 1939.

## CHEMISTRY

- GEORGE W. CANNON, *Professor and Graduate Program Director*, B.A., Dakota Wesleyan, 1939; M.A., Illinois, 1941; Ph.D., 1943.
- RONALD D. ARCHER, *Professor*, B.S., Illinois State at Normal, 1953; M.S., 1954; Ph.D., Illinois, 1959.
- RAMON M. BARNES, *Associate Professor*, B.S., Oregon State, 1962; M.A., Columbia, 1963; Ph.D., Illinois, 1966.
- JOHN F. BRANDTS, *Professor*, B.A., Miami, 1956; Ph.D., Minnesota, 1961.
- PAUL E. CADE, *Professor*, B.S., Texas, 1954; Ph.D., Wisconsin, 1961.
- LOUIS A. CARPINO, *Professor*, B.S., Iowa State, 1950; Illinois, 1951; Ph.D., 1953.
- JOHN A. CHANDLER, *Associate Professor*, B.S., Ohio, 1955; M.S., Illinois, 1958; Ph.D., 1959.
- JAMES C. W. CHIEN, *Professor*, B.S., St. John's, 1949; B.A., Wayland College, 1950; M.S., Kentucky, 1951; Ph.D., Wisconsin, 1954.
- DAVID J. CURRAN, *Associate Professor*, B.S., Massachusetts, 1953; M.A., Boston College, 1958; Ph.D., Illinois, 1961.
- JOHN W. GEORGE, *Associate Professor*, B.A., Princeton, 1948; M.A., North Carolina, 1950; Ph.D., M.I.T., 1958.
- RICHARD GREEN, *Adjunct Assistant Professor*, B.A., Concordia, 1961; M.S., North Dakota State, 1963; Ph.D., Louisville, 1969.
- STEPHEN S. HIXSON, *Associate Professor*, B.A., Pennsylvania, 1965; Ph.D., Wisconsin, 1970.
- ROBERT R. HOLMES, *Professor*, B.S., Illinois Institute of Technology, 1950; Ph.D., Purdue, 1954.
- CLIFFORD P. LILLYA, *Professor*, B.A., Kalamazoo, 1959; Ph.D., Harvard, 1964.
- WILLIAM J. MACKNIGHT, *Professor*, B.S., Rochester, 1958; M.A., Princeton, 1963; Ph.D., 1964.
- EARL J. MCWHORTER, *Associate Professor*, B.S., Rensselaer Polytechnic Institute, 1950; Ph.D., Cornell, 1955.
- BERNARD MILLER, *Professor*, B.S., C.C.N.Y., 1951; M.A., Columbia, 1953; Ph.D., 1955.
- JOHN L. RAGLE, *Professor*, B.S., California at Berkeley, 1954; Ph.D., State College of Washington, 1957.
- MARVIN D. RAUSCH, *Professor*, B.S., Kansas, 1952; Ph.D., 1955.
- MARION B. RHODES, *Assistant Professor*, B.A., Connecticut, 1958; M.S., Massachusetts, 1960; Ph.D., 1966.
- JOHN E. ROBERTS, *Professor*, B.S., New Hampshire, 1942; M.S., 1944; Ph.D., Cornell, 1947.
- ROBERT L. ROWELL, *Associate Professor*, B.S., State Teachers College at Bridgewater, Mass., 1954; M.S., Boston College, 1956; Ph.D., Indiana, 1960.
- SIDNEY SIGGIA, *Professor*, B.S., Queens College, 1942; M.S., Brooklyn Polytechnic Institute, 1943; Ph.D., 1944.
- J. HAROLD SMITH, *Professor*, B.S., Utah, 1936; M.S., 1938; Ph.D., Wisconsin, 1941.
- RICHARD S. STEIN, *Professor*, B.S., Brooklyn Polytechnic Institute, 1945; M.S., Princeton, 1948; Ph.D., 1949.
- THOMAS R. STENGLE, *Professor*, B.S., Franklin & Marshall, 1951; M.S., Michigan, 1953; Ph.D., 1961.

## GRADUATE SCHOOL

HOWARD D. STIDHAM, *Associate Professor*, B.S., Trinity College, 1950; Ph.D., Massachusetts Institute of Technology, 1955.

PETER C. UDEN, *Associate Professor*, B.S., Bristol, 1961; Ph.D., 1964.

ROBERT M. WILLIAMS, *Assistant Professor*, B.A., Dartmouth, 1951; M.S., New Hampshire, 1953; Ph.D., Iowa State, 1958.

JOHN S. WOOD, *Professor*, B.A., Keele, 1958; Ph.D., Manchester, 1962.

OLIVER T. ZAJICEK, *Associate Professor*, B.S., Baldwin-Wallace, 1950; M.S., Wayne State, 1958; Ph.D., 1961.

The chemistry department offers programs leading to the M.S. and Ph.D. degrees in analytical, inorganic, organic, and physical chemistry and in interdisciplinary areas. In addition, the department actively participates in the Five College Ph.D. Program.

During their first year doctoral students are expected to complete qualifying requirements in the four areas of chemistry (or certain cognate areas). Qualification requires the demonstration of competence at the advanced undergraduate or beginning graduate level. It can be accomplished by formal course work or by examination. Students fulfill the Ph.D. comprehensive examination requirement by passing a series of cumulative examinations in their specialty. All doctoral candidates are required to pass a departmental examination showing that they have a reading knowledge of German, Russian, or Japanese sufficient to understand journal literature.

In order to allow each student's program to be tailored as closely as possible to individual needs, the department has few formal course requirements for the doctoral degree. On entrance, the student is assigned an adviser who helps plan the initial program. After the student has selected a research topic, the research adviser helps plan the remainder of the course program.

M.S. degree candidates must qualify in three areas in their first year. Thirty credits of graduate work must be presented; 10 of these are awarded for the thesis. The course of study is planned by the student and the adviser. No language or cumulative examinations are required. An acceptable research thesis must be presented and defended.

The M.S. degree may be awarded to doctoral candidates after they have satisfied all Ph.D. qualifying and cumulative examination requirements and requirements of the Graduate School.

Students accepted into graduate programs are expected to have undergraduate preparation comparable to that recommended by the American Chemical Society. Those who have not fulfilled these requirements may be admitted as provisional students until the deficiencies have been removed. All entering graduate students take placement examinations in the week prior to the beginning of the first week of graduate study. These are designed to evaluate the student's preparation and assist in planning a course of study. When a student elects an interdisciplinary research problem, an individual program of courses and examination requirements may be worked out to satisfy special needs. For example, the chemistry department has a close association with the Polymer Science and Engineering Program and many graduate students pursue interdisciplinary work in the two areas.

The Chemistry Department also offers a program of

## UNIVERSITY OF MASSACHUSETTS

## CHEMISTRY

study in chemistry leading to the degree of Master of Arts in Teaching (M.A.T.). The primary aim of the program is to prepare those who do not have adequate or appropriate classroom teaching experience — but who hold a B.A. or B.S. degree — to become effective classroom teachers either at the secondary school or the community/junior college level. The M.A.T. program leads to a professional degree which combines essential aspects of the Master of Education with the academic tradition of the Master of Science degree. It simultaneously assures balanced competence in a) field of chemistry, and b) daily classroom performance of the teacher's role.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (for either major or minor credit)

##### 701. ADVANCED ANALYTICAL CHEMISTRY.

Special laboratory work to meet the needs of the individual student.

Prerequisite, Chem 513 or equivalent.

*Credit, 1-5.*

##### 705. LABORATORY GLASS BLOWING FOR SCIENTISTS.

Technique of fabrication and repair of glass apparatus useful in research.

Prerequisite, permission of instructor.

*Credit, 0.*

##### 706. APPLIED ANALYTICAL CHEMISTRY.

Application of basic analytical principles and techniques to the solution of actual analytical problems. The interrelationship between the diverse analytical approaches, as applied to organic, inorganic, qualitative, and quantitative problems.

Prerequisite, Chem 513.

Mr. Siggia.

##### 710. ELECTROANALYTICAL CHEMISTRY.

Principles of electrochemistry and their relation to the newer electroanalytical methods.

Prerequisite, Chem 513 or equivalent.

Mr. Curran.

##### 715. SPECTROANALYTICAL CHEMISTRY.

Theory and practice of modern chemical analysis methods based upon spectroscopic measurements of atoms and molecules in solid, liquid, gas, and plasma states. Includes x-ray, optical, and radio frequency techniques.

Prerequisite, Chem 513 or equivalent.

*Credit, 4.* Mr. Barnes.

##### 716. CHEMICAL SEPARATION METHODS.

Methods of chemical analysis using separatory techniques. Theory of separations and practical treatment of chromatographic methods, liquid-liquid extraction, precipitation, distillation, electrical and membrane separations.

Prerequisite, Chem 513 or 515 or permission of instructor.

*Credit, 4.* Mr. Uden.

##### 741. INORGANIC PREPARATIONS LABORATORY.

Preparation and testing of various types of inorganic substances, to teach important techniques and give familiarity with the reactions and properties of inorganic materials.

*Credit, 3-5.*

##### 742. INORGANIC CHEMISTRY OF THE LESS FAMILIAR ELEMENTS.

The chemistry of some of the less familiar elements, with correlations among structural, thermodynamic, kinetic and chemical properties.

##### 747. STRUCTURAL INORGANIC CHEMISTRY.

Application of principles of spectroscopy and magnetic resonance to structural aspects of inorganic substances. Symmetry, nonrigid molecules, coordination compounds, metal carbonyls, bioinorganic systems, hydrogen bonding, solid state effects.

Prerequisite, Chem 546 or equivalent.

Mr. Holmes.

##### 748. COORDINATION CHEMISTRY.

Molecular orbital bonding theory, spectroscopy, magnetism, stereochemistry, and reaction mechanisms as applied to coordination species. Emphasis on transition elements.

Prerequisite, Chem 546 or equivalent

Mr. Archer.

##### 756. TOPICS IN INORGANIC CHEMISTRY

Topics such as coordination chemistry, non-aqueous solvents, less familiar oxidation states, acid base theories, reaction mechanisms, etc.

Prerequisite, Chem 546 or equivalent

*Credit, 2 each semester. Maximum credit, 6.*

##### 760. ORGANIC REACTION MECHANISMS.

A detailed survey of the basic organic reactions in terms of the relationship between structure and reactivity. Mechanistic presentation brings each topic up-to-date on the basis of current work.

Prerequisite, Chem 571, or permission of instructor

##### 761. PHYSICAL ORGANIC CHEMISTRY

Application of theory and physical principles to problems of structure, spectroscopy, and reactivity.

Prerequisite, Chem 571; corequisite, Chem 594, or permission of instructor.

##### 765. ADVANCED ORGANIC CHEMISTRY LABORATORY.

Discussion and laboratory work involving experimental techniques of research and design of experiments. Syntheses of compounds desired for research and use of the original literature.

Prerequisite, a year course in organic chemistry. *Credit, 1-5.*

##### 770. HETEROCYCLIC CHEMISTRY.

The chemistry of the common organic heterocyclic compounds containing nitrogen, oxygen, and sulfur. Consideration of mechanisms of the reactions discussed.

Prerequisite, Chem 571 or equivalent.

Mr. McEwen

##### 771. ORGANOMETALLIC CHEMISTRY

The chemistry of compounds containing carbon-metal and carbon-metalloid bonds. Preparation, structure, physical properties, chemical reactions, and synthetic applications of organometallic derivatives. Topics of current interest stressed.

Prerequisite, Chem 571 or equivalent.

Mr. Rausch.

##### 772. CHEMISTRY OF NATURAL PRODUCTS.

Natural products of current interest, primarily from the steroid, terpene, and alkaloid groups. Emphasis on structural proofs, stereochemistry, synthesis, and biogenetic relationships.

Prerequisite, Chem 571 or permission of instructor.

Mr. McWhorter.

##### 775. SPECIAL TOPICS IN ORGANIC CHEMISTRY.

One to three topics of current interest discussed in detail. Recent developments of theoretical and/or synthetic importance to organic chemistry.

Prerequisite, Chem 571 or permission of instructor.

*Maximum credit, 6.*

##### 776. ORGANIC SYNTHESIS.

Important synthetic reactions, with stress on recent developments in methods of organic synthesis. Develops the student's ability to propose his own syntheses of complex molecules.

Prerequisite, Chem 571 or permission of instructor.

##### 785. STATISTICAL THERMODYNAMICS

Introduction to statistical thermodynamics. Microcanonical, Canonical, Grand Canonical, and Generalized Ensembles. Application to chemical problems.

Prerequisite, Chem 595 or equivalent.

Mr. Sudham, Mr. Cade.



## CHEMISTRY

## GRADUATE SCHOOL

### 787. CHEMICAL SPECTROSCOPY, TECHNIQUE AND APPLICATIONS.

Introduction to the elementary theory, and interpretation of data obtained in applications of infrared, Raman, visible, ultraviolet, nuclear quadrupole and nmr spectroscopy to chemical problems.  
Prerequisite, Chem 586 or equivalent.

Mr. Stengle, Mr. Stidham.

### 788. CHEMICAL SPECTROSCOPY THEORY.

Introduction to the theory of infrared, Raman, visible and ultraviolet, nuclear quadrupole and nuclear magnetic resonance spectroscopy.  
Prerequisites, Chem 787 and permission of instructors.

Mr. Stidham, Mr. Stengle.

### 791, 792. QUANTUM CHEMISTRY.

Quantum mechanics and its application to chemical problems and matter.

Prerequisite, Chem 546 or equivalent.

*Credit, 3 each semester.* Mr. Cade, Mr. Ragle.

### 793, 794. X-RAY CRYSTALLOGRAPHY.

Crystal symmetry and space groups. Principles of diffraction of x-rays, electrons and neutrons. Solution of crystal structures using single crystal techniques. Methods of obtaining trial structures and their refinement.

Prerequisite, Chem 281 or equivalent.

*Credit, 3 each semester.* Mr. Wood.

### 795. TOPICS IN PHYSICAL CHEMISTRY.

Prerequisites, Chem 595 and 546 or equivalent.

*Credit, 2 each semester. Maximum credit, 6.*

### 797. ORGANIC POLYMERIZATION REACTIONS.

Mechanisms, kinetics, and thermodynamics of principal types of polymerization reactions and their relationship to the properties of resulting polymers.

Prerequisite, Chem 166 or equivalent.

Mr. Lenz.

### 798, 799. PHYSICAL CHEMISTRY OF HIGH POLYMERS.

Structure of solid polymers, determination of molecular weights, sizes and shapes, mechanical properties of solid polymers, colligative properties of polymer solutions, polyelectrolytes, and physical chemistry of proteins.

Prerequisite, Chem 785 or equivalent.

*Credit, 3 each semester.* Mr. Stein, Mr. MacKnight.

### 891. SEMINAR.

Conference, reports or lectures.

*Credit, 1 each semester. Maximum credit, 2.*

### 895. RESEARCH PROBLEM.

Students prepare two proposals for research problems primarily involving library research, not directly related to the thesis topic, if the latter has been selected.

*Credit, 4.*

### 800. MASTER'S THESIS.

*Credit, 10.*

### 900. DOCTORAL DISSERTATION.

*Credit, 18.*

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

#### 513. INSTRUMENTAL ANALYSIS.

Theory and practice of modern analyses utilizing optical, electrical, and thermal properties. Selected modern separation methods may be included.

Two class hours, one 4-hour laboratory period.

Prerequisites, Chem 210 and 586.

Mr. Barnes.

#### 515. THEORY OF ANALYTICAL PROCESSES.

Topics such as chemical equilibrium, precipitate formation, chelating agents, multistage separation, etc., having general applicability in chemical investigations.

Three class hours, laboratory optional (1 extra credit).

Prerequisites, Chem 166 and 586.

*Credit, 3-4.*

#### 516. CHEMICAL MICROSCOPY.

Optics of the microscope, micrometry, microscopic study of fibers, crystals, physicochemical phenomena, qualitative analysis, and an introduction to electron microscopy.

Prerequisite, Chem 513 or permission of instructor.

Two 3-hour laboratory periods. *Credit, 2.* Mr. Roberts.

#### 517. MICROQUANTITATIVE ANALYSIS.

Quantitative determination of carbon, hydrogen, oxygen, nitrogen, sulfur, halogens, phosphorous. Both organic and inorganic compounds included in microgram scale analyses.

Prerequisite, Chem 513 or permission of instructor.

One 4-hour laboratory period.

*Credit, 1.*

#### 519. ELECTRONICS INSTRUMENTATION FOR SCIENTISTS.

Laboratory-oriented course. Begins with electronic principles and leads through servo-systems, operational amplifiers, digital circuits, and other measurement devices.

Two 3-hour laboratory periods.

Prerequisites, one year of physics and permission of instructor.

Mr. Barnes, Mr. Curran.

#### 544. RADIOCHEMISTRY.

Character of atomic nuclei, nuclear reactions, radiation and its detection, and techniques for the study and utilization of radionuclides.

Three class hours, one 3-hour laboratory period.

Prerequisite, Chem 210 or 127 or permission of instructor.

*Credit, 4.* Mr. Richason.

#### 546. THEORETICAL INORGANIC CHEMISTRY.

Survey of theoretical aspects of inorganic chemistry chosen from such topics as electronic structure and its relation to periodic properties, chemical bonding, molecular structure, coordination chemistry, acid-base theory, non-aqueous systems, and reaction mechanisms.

Prerequisite, Chem 585.

#### 547. INORGANIC CHEMISTRY OF THE COMMON ELEMENTS.

Chemistry of common element compounds based on thermodynamics, kinetics, structure, bonding, and periodicity (Optional 2-credit, 6-hour inorganic technique laboratory on demand.)

Prerequisite, Chem 546 or permission of instructor.

*Credit, 3-5.*

#### 571. ADVANCED ORGANIC CHEMISTRY.

An intensive survey of basic fundamentals; brings the student up-to-date on current work. Includes a detailed mechanistic study of some of the more important organic reactions.

Prerequisite, one year of organic chemistry or permission of instructor.

#### 572. IDENTIFICATION OF ORGANIC COMPOUNDS.

Identification of unknowns, both single compounds and mixtures of organic compounds, by their reactions, preparation of derivatives, spectra, and other physical properties. Two class hours, two 3-hour laboratory periods.

Prerequisites, one year of organic chemistry and permission of instructor.

*Credit, 4.*

#### 594. ADVANCED PHYSICAL CHEMISTRY.

Survey of modern physical chemistry emphasis on fundamentals of quantum mechanics and statistical mechanics. For students not taking further advanced work in these areas.

Prerequisite, Chem 586.

#### 595. ADVANCED PHYSICAL CHEMISTRY.

Topics such as chemical thermodynamics, statistical mechanics, introductory quantum chemistry, and theories of gases, liquids, and solids.

Prerequisite, Chem 586.

#### COURSES NOT FOR MAJOR CREDIT

(No graduate credit for students majoring in chemistry)

## UNIVERSITY OF MASSACHUSETTS

### 561, 562. ORGANIC CHEMISTRY.

Introduction to the chemistry of carbon compounds. Survey of the principal classes of organic compounds and their reactions with emphasis on the relation of structure and reactivity.

Prerequisite, Chem 112. *Credit, 3 each semester.*

### 563, 564 ORGANIC CHEMISTRY LABORATORY.

Application of the experimental techniques of organic chemistry to the preparation, purification, and identification of organic compounds.

One 3-hour laboratory period.

Concurrent enrollment in Chem 561, 562 required.

*Credit, 1 each semester.*

### 580. ELEMENTARY PHYSICAL CHEMICAL LABORATORY.

One 3-hour laboratory period.

Concurrent enrollment in Chem 582 required

*Credit, 1. Mr. Stengle.*

### 581. ELEMENTARY PHYSICAL CHEMISTRY.

Basic principles of physical chemistry designed for students with a limited mathematical background. Not open to chemistry majors.

Prerequisites, Chem 112, Physics 142, and Math 124.

*Mr. Stengle.*

### 582. ELEMENTARY PHYSICAL CHEMISTRY.

Continuation of Chemistry 581.

Two class hours.

*Credit, 2. Mr. Stengle.*

### 585, 586. PHYSICAL CHEMISTRY.

Fundamental theories and laws of physical chemistry.

Prerequisites, Math 174 and Physics 142.

*Credit, 3 each semester.*

### 587, 588. PHYSICAL CHEMISTRY LABORATORY.

Experience in modern physicochemical techniques. Concurrent enrollment in Chem 585, 586 required.

*Credit, 2 each semester. Mr. Stidham.*

## CIVIL ENGINEERING

CHARLES E. CARVER, JR., *Professor*, B.S.C.E., Vermont, 1947; M.S.C.E., Massachusetts Institute of Technology, 1949; D.S., 1955.

ALEXANDER CHAJES, *Associate Professor*, B.S.C.E., Cooper Union, 1952; M.S.C.E., Polytechnical Institute, 1955; Ph.D., Cornell, 1964.

JOSEPH M. COLONELL, *Professor*, B.S.C.E., Colorado, 1958; M.S.C.E., Washington State, 1962; Ph.D., Stanford, 1966.

FRANCIS A. DIGIANO, *Associate Professor*, B.S.C.E., Massachusetts, 1964; M.S.C.E., Tufts, 1965; Ph.D., Michigan, 1969.

FREDERICK J. DZIALO, *Associate Professor*, B.S.C.E., Massachusetts, 1954; M.S.C.E., 1957; Ph.D., Rensselaer Polytechnic Institute, 1965.

RICHARD J. FARRIS, *Associate Professor*, M.S.C.E., Utah, 1969; Ph.D., 1970.

TSUAN H. FENG, *Professor*, B.S.C.E., Pei-Yang University, China, 1940; M.S.C.E., Wisconsin, 1946; Ph.D., 1950.

DENTON B. HARRIS, *Assistant Professor*, B.S.C.E., Massachusetts, 1952; M.S.C.E., 1953.

KARL N. HENDRICKSON, *Professor*, B.S.G.E., Maine, 1938; B.S.C.E., 1939; M.S.C.E., 1941.

WILLIAM E. HERONEMUS, *Professor*, B.S., United States Naval Academy, 1941; M.S., Massachusetts Institute of Technology, 1948.

GABBIEL HORVAY, *Professor*, B.S., New York University, 1933; E.E., Columbia, 1931; Ph.D., 1939.

JOSEPH S. MARCUS, *Professor and Associate Dean*, B.S.Ch.E., Worcester Polytechnic Institute, 1944; M.S.C.E., Massachusetts, 1954.

MELTON M. MILLER, JR., *Associate Professor*, B.S.C.E., Vermont, 1955; M.S.C.E., Purdue, 1958; Ph.D., 1964.

PAUL W. SHULDINER, *Professor*, B.S.C.E., University of Illinois, 1951; M.S.C.E., 1953; Eng.D., California, Berkeley, 1961.

FRED D. STOCKTON, *Associate Professor*, B.S.C.E., Alabama, 1942; M.E., Brown, 1949; Ph.D., 1953.

The Civil Engineering Department offers the M.S. and Ph.D. degrees in Civil Engineering, Environmental Engineering, and Ocean Engineering. The two latter programs and the corresponding degrees and degree requirements are described elsewhere in this Bulletin under the corresponding headings. The Master of Science degree in Civil Engineering requires 31 graduate credits, of which six must be for a thesis or project with report, at the discretion of the Guidance Committee. There are the following options, each with a required core of four of five courses: Environmental Engineering, Fluid Mechanics and Hydraulics, Mechanics and Structures, Ocean Engineering, Soil Mechanics and Foundations, and Transportation Engineering.

## Civil Engineering

### GRADUATE FACULTY

MERIT P. WHITE, *Commonwealth Professor and Head of the Department of Civil Engineering*, B.A., Dartmouth, 1930; C.E., 1931; M.S.C.E., California Institute of Technology, 1932; Ph.D., 1935.

WILLIAM A. NASH, *Professor and Graduate Program Director*, B.S.C.E., Illinois Institute of Technology, 1944; M.S., 1946; Ph.D., Michigan, 1949.

DONALD D. ADRIAN, *Professor*, B.A., Notre Dame, 1957; B.S., 1958; M.S., California at Berkeley, 1959; Ph.D., Stanford University, 1964.

ROBERT R. ARCHER, *Professor*, B.S., Massachusetts Institute of Technology, 1952; Ph.D., 1956.

STANLEY M. BEMBEN, *Associate Professor*, B.S., Massachusetts, 1956; M.S., Illinois, 1958; Ph.D., Cornell, 1966.

BERNARD B. BERGER, *Professor*, B.S., Massachusetts Institute of Technology, 1935; M.S., Harvard, 1948.

WILLIAM W. BOYER, *Professor*, B.S.C.E., North Carolina State, 1947; M.S.C.E., 1950.

## CIVIL ENGINEERING

The requirements for the degree of Doctor of Philosophy are specified by the Graduate School. The student's course of study, including both technical and non-technical courses as well as the dissertation topic, is determined by the student and individual guidance committee. It is intended that the entire program, including all non-technical courses, shall be related to the candidate's interests and career plans.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY

700. SPECIAL PROBLEMS. *Credit, 3-6.*

710. TRANSPORTATION ANALYSIS AND PLANNING. Analysis of traffic and transportation engineering problems in highways, railroads and airports and the planning related to those facilities.

Prerequisite, permission of instructor.

Mr. Shuldiner, Mr. Webster.

715. PAVEMENT DESIGN.

The theory of flexible and rigid pavement design; soil conditions, joints, base and subgrade material and mix.

Mr. Boyer.

716. TRANSPORTATION DESIGN.

Design of the visible features of rural and urban roadways and intersections.

Mr. Boyer, Mr. Webster.

720. THEORETICAL SOIL MECHANICS.

The behavior of soil masses subjected to such forces as seepage, frost and imposed loads.

721. APPLIED SOIL MECHANICS.

Solution of case problems applying the principles of soil mechanics to the design of embankments, retaining walls, footings, raft foundation, and pile structures.

Prerequisite, CE 720. Mr. Bemben, Mr. Hendrickson.

722. SEEPAGE ANALYSIS.

Analytical study of ground water and seepage problems related to earth structures.

Mr. Hendrickson.

723. SHEAR STRENGTH OF SOILS.

Survey of current theory and research.

Mr. Bemben.

CE 724. SUBMARINE SOIL MECHANICS AND FOUNDATION ENGINEERING (OE 724).

Exploration of marine sediments, assessment of geotechnical properties and methods for their alteration, submarine slope stability, and foundation design factors for structures on and in marine sediments.

Prerequisite, CE 220 or equivalent.

Mr. Bemben.

730. PLASTIC STEEL DESIGN.

Plastic analysis and design of steel frames, plates, and shells.

Prerequisites, CE 331 and 532.

Mr. Chajes, Mr. Dzialo, Mr. Stockton.

731, 732. CIVIL ENGINEERING ANALYSIS I, II.

Mathematical and computational methods for the solution of civil engineering problems. Topics include equilibrium problems in continuous systems and the solution of related self adjoint boundary value problems in one or more space variables; vibration and stability problems, orthogonal functions, and eigenvalue problems; propagation problems in discrete and continuous systems.

Prerequisite: mathematical background covering topics in advanced engineering mathematics.

*Credit, 3 each semester.* Mr. Archer, Mr. Stockton.

## GRADUATE SCHOOL

734. NUMERICAL METHODS IN STRUCTURAL MECHANICS.

Application of numerical methods to the solution of problems of structural mechanics. Finite difference techniques and other methods for the solution of problems in the vibration, stability and equilibrium of structural elements.

Prerequisite, Math 585, introductory computer programming, or permission of instructor.

Mr. Archer, Mr. Miller, Mr. Stockton.

CE 738. ANALYSIS AND DESIGN OF OCEAN ENGINEERING STRUCTURES (OE 738).

Techniques for analysis and prediction of loading, performance, and durability of fixed coastal and offshore structures; examination of structural design factors peculiar to the marine environment.

Prerequisite, CE/OE 559.

Mr. Miller, Mr. Nash.

741. STRUCTURAL DYNAMICS.

Behavior of linear and non-linear mechanical systems subjected to periodic forces, to non-periodic forces and to shock loads.

Mr. Archer, Mr. Chajes, Mr. Dzialo, Mr. Nash, Mr. White.

742. EXPERIMENTAL STRESS ANALYSIS.

Experimental procedures for determination of stresses and strains due to static and dynamic loads.

Mr. Harris.

743. ELASTICITY.

General equations of the mathematical theory of elasticity in space. Plane strain and plane stress in cartesian, polar, and general orthogonal coordinates.

Mr. Archer, Mr. Dzialo, Mr. Nash, Mr. Stockton.

744. THEORY OF PLATES.

Classical theory of plates as well as modern developments. Relationship of the general theory of elasticity to plate theory.

Mr. Archer, Mr. Dzialo, Mr. Nash, Mr. Stockton.

745. STRUCTURAL STABILITY.

Linear and non-linear buckling of columns, frames, plates and shells; elastic, inelastic, and finite deformation theories. Exact solutions and approximate solutions by energy and finite difference methods.

Mr. Archer, Mr. Chajes, Mr. Nash.

746. SEISMIC ANALYSIS OF STRUCTURES.

Principles of engineering seismology including the analysis and design of structures to resist earthquake motions.

Prerequisite, CE 741.

Mr. Chajes, Mr. Dzialo, Mr. Nash, Mr. White.

747. STRUCTURAL DYNAMICS II.

A continuation of CE 741. Emphasis on analysis of civil engineering structures subject to various steady state and transient loadings.

Prerequisite, CE 741.

Mr. Chajes, Mr. Dzialo, Mr. Nash, Mr. White.

748. STRUCTURAL SHELLS.

Analysis of structural shells. Membrane theory, bending theory of shells of revolution, shear deformation shell theory, nonlinear theories, stability.

Prerequisite, permission of instructor.

Mr. Archer, Mr. Nash.

CE 751. FLUID MECHANICS OF THE OCEAN (OE 751).

Introduction to geophysical fluid dynamics. Emphasis on large-scale interactions between the atmosphere and the oceans.

Prerequisite, CE 256/556 or equivalent.

Mr. Colonell, Mr. Mangarella.



## UNIVERSITY OF MASSACHUSETTS

### CE 752. OCEAN WAVE THEORY (OE 752).

Classical theories of water waves, generation and propagation of waves at sea; observation and analysis of sea waves, wave spectra, sea forecasting, and wave effects.  
Prerequisite, CE 256/556 or equivalent. Mr. Colonell.

### 763. SUBSURFACE HYDROLOGY.

Interrelation of surface and subsurface hydrology. Saturated and unsaturated flow in permeable media. Development and utilization of subsurface waters. Chemical, bacteriological, and physical aspects of ground water quality. Deep well liquid wastes disposal.  
Prerequisite, CE 660 or permission of instructor. Mr. Adrian.

### CE 765. COASTAL AND ESTUARINE HYDRODYNAMICS (OE 765).

Techniques for analysis, simulation, prediction, and measurement of hydrodynamic behavior of coastal and estuarine waters. Environmental considerations in the planning, design, construction, and operation of engineering works in coastal waters.  
Prerequisites, CE 256/556 and CE/OE 559, or equivalent. Mr. Colonell.

### 770. ENVIRONMENTAL ENGINEERING DESIGN.

Selection, evaluation, and design of environmental engineering processes and systems based on laboratory evaluations and pilot plant studies.  
Prerequisites, CE 771 and 772. Mr. DiGiano, Mr. Lindsey.

### 771. UNIT PROCESSES OF ENVIRONMENTAL ENGINEERING.

Application of biological processes in environmental engineering: aerobic and anaerobic biological oxidation. Design of aeration and disinfection systems.  
Prerequisite, CE 669 and 670. Mr. Lindsey.

### 772. UNIT OPERATIONS OF ENVIRONMENTAL ENGINEERING.

Application of physical and chemical processes in environmental engineering: sedimentation, flotation, filtration, adsorption, ion exchange, drying and chemical coagulation.  
Prerequisites, CE 669 and 670. Mr. DiGiano.

### CE 773. AIR SAMPLING AND ANALYSIS.

Applications of fluid mechanics and gas laws to measurement and collection of atmospheric pollutants which are injurious to health. These pollutants are analyzed by various chemical techniques.  
Prerequisite, permission of instructor. Mr. Halitsky.

### 774. ADVANCED WASTE TREATMENT.

Application of new techniques for treatment of waste water with the ultimate objective of providing closed-cycle use. Methods of removing nonbiodegradables and inorganics from wastewater using physical and chemical processes.  
Prerequisites, CE 771 and 772. Mr. DiGiano.

### 775. ENVIRONMENTAL SYSTEMS SIMULATION.

Theoretical and practical factors governing simulation in environmental engineering systems. Mathematical models of water resources, water supply, waste treatment and disposal systems.  
Prerequisites, Math 187 and CE 270. Mr. Adrian, Mr. Mangarella.

### 776. BIO-INSTRUMENTATION OF ENVIRONMENTAL SYSTEMS.

Instrumentation and analytical techniques for research on biological, biochemical, and chemical systems influencing man's environment. Spectral theory and absorption spectroscopy, chromatographic and mass spectrographic analysis, automatic analysis instruments.  
Prerequisite, CE 672 or equivalent. Mr. Kuzminski.

### 780. MECHANICS OF MATERIALS.

Advanced topics related to the mechanical behavior of structural materials. Mr. Harris.

## CIVIL ENGINEERING

### CE 783. STRUCTURAL MECHANICS OF DEEP SUBMERSIBLE VEHICLES (OE 783).

Elastic and inelastic action of pressure hull structure for deep submersible vehicles; design criteria for stiffened shells and plating common to such systems.  
Prerequisite, CE 141 or CE 240. Mr. Nash.

### CE 792. DEEP OCEAN SYSTEMS ENGINEERING AND DESIGN (OE 792).

Systems engineering applied to analysis and synthesis of systems capable of doing useful work in the deep oceans. Emphasis on design of deep-submergence vehicles. Three class hours, one 3-hour laboratory period.  
Credit, 4. Mr. Heronemus.

### CE 794. FUNDAMENTALS OF NAVAL ARCHITECTURE (OE 794).

Vehicle buoyancy and stability, vehicle resistance and production of thrust, motion of surfaced and submerged bodies, vehicle maneuvering and control, towing and mooring line analysis. Three class hours, one 3-hour laboratory period.  
Credit, 4. Mr. Adams, Mr. Heronemus.

### CE 795. OCEAN ENGINEERING FIELD LABORATORY (OE 795).

Introduction to oceanographic measurements and ocean engineering field operations. Emphasis on development of practical approaches to problems in ocean environment.  
Prerequisite, OE core curriculum. Credit, 1-6.

### 850, 851. SEMINAR.

Presentation by the graduate student of selected current literature and research. Visiting lecturers. One class hour.  
Credit, 1.

### 800. MASTER'S THESIS.

Minimum credit, 6.

### CE 801. MASTER'S PROJECT

Research carried out and reported under the supervision of student's advisor as partial fulfillment of the requirements for Master's degree in Civil Engineering or Environmental Engineering. May not be taken by those taking CE 800, Master's Thesis.  
Credit, 3-6.

### 900. DOCTORAL DISSERTATION

Credit, 18.

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

(For either major or minor credit).

### 522. SOIL TESTING.

Sampling and testing of soils for engineering purposes. One class hour, two 3-hour laboratory periods.  
Prerequisite, CE 220 or equivalent. Mr. Bembem.

### 523. SOIL MECHANICS FOR TRANSPORTATION ENGINEERING.

Application of the principles of soil mechanics in the field of Transportation Engineering. Topics include evaluation of the stability of soils as subgrade and embankment materials, the role of the subgrade properties of soils on the design of pavements, and methods for improving the subgrade properties of soils.  
Prerequisite, CE 220. Mr. Bembem.

### 532. THEORY OF STRUCTURES II.

Analysis of statically indeterminate structures.  
Prerequisite, CE 230. Mr. Archer, Mr. Chajes, Mr. Nash, Mr. Stockton.

### 534. THEORY OF STRUCTURES III.

Analysis of complex or special structures.  
Prerequisite, CE 232; corequisite CE 331 and 333. Mr. Miller.

### 535. MATRIX ANALYSIS OF STRUCTURES.

Development and use of the flexibility and stiffness methods of matrix analysis for determinate and indeterminate structures.  
Prerequisite, CE 232. Mr. Archer, Mr. Chajes, Mr. Stockton.

## CIVIL ENGINEERING

### 540. STRENGTH OF MATERIALS II.

Calculation of stresses and strains in components of machines and structures.

Prerequisite, CE 141.

Mr. Archer, Mr. Chajes, Mr. Dzialo,  
Mr. Stockton, Mr. White.

### 556. INTRODUCTION TO HYDRODYNAMICS.

Mathematical treatment of basic theorems of classical hydrodynamics: potential flow, conformal mapping, wave and vortex motion. Practical application of hydrodynamic principles to engineering problems.

Prerequisite, Math 186 or permission of instructor.

Mr. Carver, Mr. Colonell.

### CE 559. ENGINEERING OCEANOGRAPHY (OE 559).

Physical, biological, chemical, and geological characteristics of the marine environment which are relevant to ocean engineering activities.

### 561. OPEN-CHANNEL FLOW.

Steady flow in open channels including channel transitions and controls, sediment transport, and elementary design of related hydraulic structures.

Prerequisite, CE 260.

Mr. Higgins, Mr. Mangarella.

### 575. ATMOSPHERIC DISPERSION OF POLLUTANTS.

Physical and dynamical properties of the atmosphere and their effect on dispersion of air-borne material. Methods of calculation of concentration fields in simple and complex flowfields. Practical approaches to the analysis of diffusion from point, jet, and urban area sources. Review of research techniques for measuring diffusion parameters.

Prerequisite, Math 174.

Credit, 2. Mr. Halitsky.

### CE 581. MATERIALS IN THE OCEAN ENVIRONMENT (OE 581).

Response of materials to the ocean environment, including theories of corrosion, corrosion control, fouling and antifouling systems.

Mr. Harris.

### CE 590. ENGINEERING DESIGN OF SYSTEM PAYLOAD DEVICES (OE 590).

Techniques for augmentation of man's abilities in the seas. Underwater illumination, manipulative and prosthetic devices, tools and instruments for underwater work.

Prerequisite, permission of instructor.

Mr. Adams.

### CE 591. MARINE DESIGN (OE 591).

Fundamentals of ocean engineering design technology. Specific emphasis on matters peculiar to the marine environment.

Three class hours, one 3-hour laboratory period.

Credit, 4. Mr. Adams, Mr. Heronemus.

### CE 593. PUBLIC POLICY AND THE USE OF THE SEAS (OE 593).

Policies of the United States and other nations toward sovereignty over and use of the seas. Laws and agreements relating to jurisdiction over oceanic and estuarine resources and arrangements for prevention of their degradation.

Credit, 2. Mr. Heronemus, Mr. Zahradnik.

### 605. ADVANCED SURVEYING.

Elements of astronomical, geodetic, and photogrammetric surveying; coordinate systems and map projections.

Two class hours, one 3-hour laboratory period.

Prerequisite, CE 101.

Mr. Boyer, Mr. Weidmann.

### 611. TRAFFIC ENGINEERING.

Engineering solutions to planning, design, and operations problems of urban and rural street and highway networks. Two class hours, one 3-hour laboratory period.

Prerequisite, CE 210.

Mr. Boyer, Mr. Webster.

### 634. ADVANCED TOPICS IN CONCRETE.

Design of various types of reinforced concrete-building frames; elastic theory and ultimate-strength procedures.

Prerequisites, CE 232 and 333.

Mr. Miller.

## GRADUATE SCHOOL

### 657. THEORY OF HYDRAULIC SIMILITUDE.

Hydraulic similitude, dimensional analysis, methods of obtaining dynamic similarity in hydraulic models in actual practice, analysis of typical hydraulic models.

Prerequisite, CE 257.

Mr. Carver.

### 660. HYDROLOGY.

The hydrologic cycle, including precipitation, runoff, ground water, flood routing, reservoir sedimentation, water law, and applications of hydrologic techniques to water resources engineering.

Prerequisite, CE 260 or permission of instructor.

Mr. Higgins.

### 662. WATER RESOURCES ENGINEERING.

Planning and design of dams, reservoirs, and other related hydraulic structures, including analysis of existing and proposed water resources projects.

Prerequisite, CE 260 or permission of instructor.

Mr. Higgins.

### 665. ENVIRONMENTAL INSTITUTIONS AND POLICIES.

Public policies and laws relating to the use and conservation of water, air, land resources. Analysis of environmental-related governmental organizations at the federal, state, and local levels.

Prerequisite, permission of instructor.

Mr. Adrian, Mr. Berger.

### 669. ENVIRONMENTAL ENGINEERING TECHNOLOGY.

The technology available to provide clean air, clean water, and to dispose of solid waste. Some field trips to see environmental effects, treatment plants, and quality-monitoring stations.

One 4-hour laboratory (or field trip) and one 1-hour lecture.

Prerequisite, permission of the instructor.

Credit, 2.

### 670. ADVANCED ENVIRONMENTAL ENGINEERING PRINCIPLES.

The underlying physical, chemical, and biological principles involved in engineering studies of air, water, and solid-waste pollution problems are developed. Basic concepts are combined to model pollution-control systems and responses of the atmospheric, aquatic, and terrestrial environments.

Prerequisite, permission of instructor.

Mr. DiGiano.

### 671. INDUSTRIAL WASTE TREATMENT AND CONTROL.

Composition of industrial effluents; pollution criteria and effects of industrial wastes on receiving waters; physical, chemical, and biological methods and applications in treatment.

Two class hours, one 3-hour laboratory period.

Prerequisite, permission of instructor.

Mr. Lindsey.

### 672. ENVIRONMENTAL ENGINEERING ANALYSIS I.

An application of chemical principles to environmental engineering analysis with specific reference to pollution indices.

Two class hours, one 3-hour laboratory period.

Prerequisite, Chem 112.

Mr. Kuzminski.

### 673. ENVIRONMENTAL ENGINEERING ANALYSIS II.

The fundamental microbiological and biochemical properties of the microorganisms important in environmental engineering practice. Two class hours, one 3-hour laboratory period.

Prerequisite, CE 672 or permission of instructor.

Mr. Kuzminski.

### 674. RADIOLOGICAL HEALTH ENGINEERING.

Basic principles and procedures pertaining to the safe control, use, and disposal of common sources of ionizing radiation.

Mr. Marcus.

### 675. SURFACE WATER QUALITY CONTROL.

Evaluation and control of water quality in streams, lakes,

## UNIVERSITY OF MASSACHUSETTS

and reservoirs. Mathematical analyses of patterns of water movement and their relation to water quality.  
Prerequisite, permission of instructor. Mr. Feng.

### 676. SOLID WASTES.

Production, collection, transportation, treatment, and disposal of solid waste products (including municipal, industrial, and agricultural wastes).  
Prerequisite, permission of instructor. Mr. Kuzminski.

### COURSES NOT FOR MAJOR CREDIT

(No graduate credit for students majoring in Civil or Environmental Engineering)

### 520. SOIL MECHANICS.

Engineering uses and mechanical properties of soils.  
Two class hours, one 3-hour laboratory period.  
Mr. Hendrickson.

### 571. INTRODUCTION TO ENVIRONMENTAL POLLUTION CONTROL.

Basic engineering aspects of environmental pollution control.  
Mr. Feng, Mr. Ward

## Classics

### GRADUATE FACULTY

GILBERT W. LAWALL, *Professor and Chairman of the Department of Classics*, B.A., Oberlin College, 1957; Ph.D., Yale University, 1961.

VINCENT J. CLEARY, *Associate Professor and Graduate Program Director*, B.S., St. Joseph's College, 1954; M.A., Villanova University, 1959; Ph.D., University of Pennsylvania, 1967.

ROBERT H. DYER, *Professor*, B.A., Auckland University College, 1954; M.A., University of New Zealand, 1955.

ROBERT J. GOAR, *Associate Professor*, B.A., Harvard College, 1954; M.A., Harvard University, 1958; Ph.D., 1968.

JOHN D. MARRY, *Assistant Professor*, B.A., Fordham University, 1968; Ph.D., Stanford University, 1973.

EDWARD PHINNEY, JR., *Professor*, B.A., University of Oregon, 1957; M.A., 1959; Ph.D., University of California at Berkeley, 1963.

ELIZABETH LYDING WILL, *Associate Professor*, B.A., Miami University, 1944; M.A., Bryn Mawr College, 1945; Ph.D., 1949.

The degree of Master of Arts in Teaching (M.A.T.) may be earned in Latin and Classical Humanities. The program is designed to prepare students for teaching careers in secondary schools. It requires two full years of work and may include study in Italy during the summer. Teaching assistantships and summer scholarships are available. A minimum of 39 credits is required, distributed as follows: 21 credits in Latin and Classical Humanities, nine credits in professional education, and nine credits in a teaching practicum accompanied by a seminar. The credits in Classical Humanities may include courses in art, history, philosophy, English, and comparative literature. Courses may be taken at the neighboring colleges (Amherst, Mount Holyoke, and Smith) under the Five College Cooperation Program. Supervised practice teaching is done in Latin

## CLASSICS

and classics courses at the University (pre-practicum) and in secondary schools (practicum). Special innovative projects and pilot programs are being conducted in schools throughout the state, staffed by M.A.T. candidates at the University. All students in the program must equip themselves with a minor in some other teaching field such as English, French, Spanish, history, or mathematics. At least 18 credits of undergraduate and graduate work must be earned in the minor field. Much or all of this should be done at the undergraduate level before the student enters the M.A.T. program. Applicants should also have completed courses in educational or adolescent psychology and foundations or philosophy of education at the undergraduate level. Graduation requirements include demonstration of familiarity with Latin authors on a departmentally approved reading list and successful completion of a comprehensive examination.

### Classics

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### CLASSICS 505. THE MATERIAL WORLD OF THE ROMANS.

The Romans as people on the basis of the archaeological evidence about their daily lives (their houses, pottery, coins, glass, textiles). Special attention to the finds from Pompeii.

#### CLASSICS 506. THE ANCIENT CITY

The city and the rise of city planning in the Near East, Greece, and Italy; stress on sociological and economic aspects. Special attention to Rome and its urbanization in the Empire.

#### CLASSICS 528. RELIGIONS OF THE GREEK WORLD

Origins and development of ancient Greek worship, deities, cults, festivals, and life-crisis ceremonies; prehistoric, Near Eastern, and Indo-Iranian influences; chthonic, philosophical, and mystical reactions to received religion.

#### CLASSICS 529. RELIGIONS OF THE ROMAN WORLD

Origins and development of native Roman worship, deities, cults, festivals, life-crisis ceremonies; importation of other cults, festivals; nature and causes of the failure of paganism and the victory of Christianity.

#### CLASSICS 585. THE DEEP STRUCTURES OF GREEK THOUGHT

The development of thought in the Greek world from Homer to Aristotle, tracing the evolution of mental concepts and ways of thinking about man and the world around him

#### CLASSICS 595. INTERPRETING ANCIENT MYTH

What some thinkers have said about ancient myth for over 3000 years, and why.

#### CLASSICS 608. THE TEACHING OF CLASSICAL HUMANITIES IN SECONDARY SCHOOLS.

Guidance in preparing enrichment material in language classes and in designing and teaching courses dealing with classical life and institutions, drama, art, mythology, and literature on the secondary level.

#### CLASSICS 610. STUDENT TEACHING. CLASSICS

Supervised practice teaching in secondary schools.  
*Credit, 1-12.*

#### CLASSICS 700. SPECIAL PROBLEMS.

Directed study of some problem in classical civilization.  
*Credit, 1-6.*



## COMMUNICATION DISORDERS

### CLASSICS 701. THE ROMAN CITY.

The topography, monuments, and daily life of selected Roman cities with emphasis on Rome itself. Sociological, economic, and environmental factors in ancient city planning. May involve travel and study in Italy. By arrangement (summer only).  
*Credit, 3-6.*

### Greek

### GREEK 700. SPECIAL PROBLEMS.

Directed study of some problems in Greek literature.  
*Credit, 1-6.*

### Latin

### LATIN 505. ORAL INTERPRETATION OF LATIN LITERATURE.

Practice in the expressive reading of Latin texts.  
One class hour.  
*Credit, 1.*  
*May be repeated up to 3 credits.*

### LATIN 515. ADVANCED GRAMMAR AND STYLE.

Structure of the language; evolution of grammatical and linguistic concepts and terminology used to describe them. Analysis of the style of representative Latin prose authors and exercises in composition.

### LATIN 607. TEACHING THE LATIN LANGUAGE.

Methods and materials for teaching the Latin language in secondary schools. May be coordinated with practice teaching experiences.  
*Credit, 3-6.*

### LATIN 608. TEACHING LATIN LITERATURE.

Methods and materials for teaching Latin literature in secondary schools. May be coordinated with practice teaching experiences.  
*Credit, 3-6.*

### LATIN 610. STUDENT TEACHING: LATIN.

Supervised practice teaching in secondary schools.  
*Credit, 1-12.*

(Two of the following courses — Latin 625-633 — are offered each semester.)

### LATIN 625. THE LATIN POLITICAL TRACT.

Selections from Sallust and Caesar accompanied by an historical and literary analysis of their works.

### LATIN 626. LATIN DIDACTIC EPIC.

Selections from Lucretius, Vergil's *Georgics*, and Ovid's *Ars Amatoria*.

### LATIN 627. LATIN HISTORY AND BIOGRAPHY.

Selections from Livy, Tacitus, and Suetonius.

### LATIN 628. LATIN DRAMA.

Selected plays of Plautus, Terence, and Seneca.

### LATIN 629. LATIN ESSAYS AND LETTERS.

The Roman mind as revealed in the philosophical works of Cicero and the moral epistles of Seneca; Roman private life and personal concerns as revealed in the letters of Cicero and Pliny.

### LATIN 630. LATIN ELEGIAC POETRY.

Selections from Catullus, Tibullus, Propertius, and Ovid.

### LATIN 631. CICERO'S ORATIONS.

The major orations of Cicero interpreted against their social and political background and analyzed according to ancient rhetorical theories.

### LATIN 632. LYRIC POETRY.

Selected lyrics of Catullus and Horace.

### LATIN 633. VERGIL'S *AENEID*.

The entire poem with attention to traditional and contemporary critical perspectives and evaluations.

## GRADUATE SCHOOL

### LATIN 700. SPECIAL PROBLEMS.

Directed study of some problem in Latin literature.  
*Credit, 2-6.*

### LATIN 701. EXPLORING LATIN LITERATURE.

Exploratory readings in a variety of Latin authors.  
*Credit, 3-6.*

### LATIN 790. SEMINAR.

Intensive, advanced study of some aspect of Latin literature.  
*Credit, 3-6.*

### LATIN 800. MASTER'S THESIS.

Research and writing of a master's thesis. Optional.  
*Maximum credit, 9.*

## Communication Disorders

### GRADUATE FACULTY

E. HARRIS NOBER, *Professor and Chairman of the Department of Communication Disorders*, B.A., 1951; M.A., Brooklyn College, 1952; Ph.D., Ohio State, 1957.

ARTHUR BOOTHROYD, *Associate Professor*, B.Sc., Kingston-upon-Hull, 1957; Ph.D., Manchester, 1968.

ROY W. GENDEL, *Associate Professor*, B.A., Knox College, 1958; M.S., Wisconsin, 1962; Ph.D., CID-Washington University, 1968.

JAY MELROSE, *Professor*, B.A., Queens College, 1948; M.A., 1953; Ph.D., Illinois, 1954.

GARY P. NERBONNE, *Associate Professor*, B.S., Central Michigan, 1959; M.A., 1962; Ph.D., Michigan State, 1967.

HENRY B. PEIRCE, JR., *Assistant Professor*, B.A., Massachusetts, 1950; M.A., Michigan, 1955; Ed.D., Boston University, 1970.

CHARLENA M. SEYMOUR, *Assistant Professor*, B.A., Howard, 1965; M.A., 1967; Ph.D., Ohio State, 1971.

HARRY N. SEYMOUR, *Assistant Professor*, B.A., Howard, 1964; M.A., 1969; Ph.D., Ohio State, 1971.

GILBERT C. TOLHURST, *Professor*, B.A., 1937; M.A., Brigham Young, 1946; Ph.D., Iowa, 1948.

The Department of Communication Disorders currently offers work leading toward the M.A. and Ph.D. degrees in Communication Studies. Applicants to the Graduate program should meet all requirements for admission to the Graduate School and either have an adequate undergraduate background in communication disorders or expect to correct deficiencies without graduate credit.

Graduate study leading to the M.A. is designed to prepare students for careers as speech pathologists, audiologists, and speech and hearing scientists, and is also preparatory for doctoral study in these fields.

The M.A. degree is offered under thesis and non-thesis option. Candidates must complete a minimum of 30 credits for either option. The thesis option allows up to six credits for the thesis.

Graduate study leading to the Ph.D. degree is designed to prepare students for positions of clinical and research leadership in academic, clinical, medical and research settings in such areas as speech pathology, audiology, language pathology and speech and hearing science.

## UNIVERSITY OF MASSACHUSETTS

For the Ph.D., a minimum of 60 credits beyond the bachelor's degree is required, exclusive of credit for the dissertation.

The Communication Disorders Clinic and the Communication Disorders Laboratory are available for clinical practicum work and for acquiring research experience. In terms of clinical preparation, on-campus and off-campus supervised clinical work is offered in order to help students meet professional requirements by the time of the completion of advanced degrees.

For both the M.A. and the Ph.D., plans of study are prepared individually in consultation with faculty advisers.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

##### 700. SPECIAL PROBLEMS.

Independent study in special subjects. Not more than 9 credits may be applied toward the M.A. degree.

*Credit, 1-3 each semester; maximum credit, 9.*

##### 781. VOICE PROBLEMS.

Voice disorders, organic and functional; symptoms, and principles and techniques of therapy and diagnosis.

Prerequisites, Comm Studies 182 and 284 or equivalents.

Mr. Peirce.

##### 782. ADVANCED CLINICAL PRACTICE.

Supervised clinical practice with children and adults with various speech and hearing disorders; group and individual therapy techniques.

Prerequisites, Comm Studies 181, 182 and 284 or equivalents.

*Credits, 1-6.*

##### 783. INTRODUCTION TO EXPERIMENTAL PHONETICS.

Review of experimental research and instrumental approaches in the study and analysis of the phonetic elements of language. Individual student reports.

Prerequisites, Comm Studies 181, 284, or equivalents.

Mr. Nerbonne

##### 784. ORGANIC PATHOLOGIES OF SPEECH.

Etiology, classification, evaluation, and speech rehabilitation of cleft palate, laryngectomy, and other organic pathologies of speech.

Prerequisites, Comm Studies 283 and 284.

##### 785. NEUROPATHOLOGIES IN COMMUNICATION DISORDERS I.

Principles concerning etiologies, instruments for evaluation, classification, and methods of clinical management of acquired aphasia and cerebral palsy.

Prerequisites, Comm Studies 284 or equivalent.

##### 787. HEARING CONSERVATION AND INDUSTRIAL AUDIOLOGY.

Identification and management of the hearing-impaired in hospitals, public schools, and industry. Noise control and other preventative measures.

Prerequisite, Comm Studies 285.

##### 788. ADVANCED CLINICAL AUDIOLOGY.

Theories, methodologies, and procedures for special diagnostic testing in audiology. Hearing, selection and evaluation procedures.

Prerequisite, Comm Studies 285.

##### 789. TRENDS IN CONTEMPORARY AUDIOLOGY.

Investigation and evaluation of the recent research and advances in knowledge concerning the auditory capacities, and the management of audiological problems.

Prerequisite, Comm Studies 788.

Mr. Nober.

## COMMUNICATION DISORDERS

##### 790. BEHAVIOR MODIFICATION IN COMMUNICATION DISORDERS.

The habilitation and rehabilitation of speech and language disorders through behavior modification, using operant procedures.

Prerequisite, Comm Studies 182 and 283.

##### 791. MANAGEMENT OF COMMUNICATION DISORDERS PROGRAMS.

Investigation, management and supervision of speech pathology and audiology programs in public schools, rehabilitation centers, hospital clinics, and in special-education residential settings.

Prerequisite, permission of instructor

##### 792. THEORIES OF HEARING.

The current acoustic, psychophysiological, physical, anatomical, psychological, and clinical aspects of audition, and the theories of hearing developed to explain them.

Prerequisite, Comm Studies 284, 285, 287/587.

Mr. Tolhurst.

##### 793. HEARING AIDS AND AMPLIFICATION.

The nature and types of amplifying systems employed with hearing-handicapped. Electro-acoustic characteristics including gain, power, acoustic response, distortion, etc. Principles and methods of selection and usage of hearing-aids.

Prerequisite, Speech 788.

##### 794. DIFFERENTIAL DIAGNOSIS IN SPEECH & LANGUAGE DISORDERS.

Review, analysis and demonstrations of the diagnostic procedures used in the assessment and evaluation of speech and language disorders.

Prerequisites, Comm Studies 182 and 281/581.

##### 800. MASTER'S THESIS.

*Credit, 3-6.*

##### 810. SEMINAR IN RESEARCH TOPICS AND METHODS.

Desirable areas and topics of investigation; application methodology and bibliography. Tentative exploration of selected subjects. Offered for doctoral students as needed, with sections arranged for each of the principal areas of the department.

##### 881. ACOUSTIC PHONETICS.

In-depth study of the acoustic characteristics of speech; distinctive acoustic features of phonetic elements and their relations to production and reception; emphasis on laboratory approaches. Student research projects.

Prerequisite, Comm Studies 783.

##### 882. PHYSIOLOGICAL PHONETICS.

In-depth study of the physiological processes involved in speech and voice production; distinctive physiological features of phonetic elements; laboratory approaches. Student research projects.

Prerequisite, Comm Studies 783.

##### 884. GRADUATE SEMINAR IN COMMUNICATION DISORDERS.

Analysis and discussion of major problems in the field of communication disorders. One of the following topics is usually offered: a) communication disorders and the teacher, b) communication disorders in geriatrics, c) communication disorders and medicine, d) the non-verbal child, e) electrophysiologic audiometry and f) speech audiometry.

Prerequisite, permission of instructor. May be repeated for credit.

*Maximum credit, 9.*

##### 900. DOCTORAL DISSERTATION.

*Credit, 18.*

#### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

##### 581. CLINICAL PROCEDURES.

Introduction to the clinical process in a Communication Disorders Clinic including personnel responsibilities, profes-

## COMMUNICATION STUDIES

sional ethics, techniques of differential diagnosis, study of clinical forms and referrals. Supervised observations of diagnostic and therapy sessions. Laboratory training in clinical equipment. Mr. Melrose.

### 586. REHABILITATION OF THE ACOUSTICALLY HANDICAPPED.

Techniques of speech therapy, auditory training, and speech reading for hard-of-hearing children and adults; multi-sensory approach to language development. Laboratory practice under supervision.

Prerequisite, Comm Studies 285.

### 587. FUNDAMENTALS OF HEARING AND SPEECH SCIENCE.

Investigation of physiological, acoustical, and psychological correlates of speech production, transmission, and reception. Exercises in the application of laboratory methods.

Prerequisites, Comm Studies 181 and 284. Mr. Nerbonne.

### 588. CLINICAL PRACTICE.

Supervised experience in therapy with individuals having articulatory-type disorders.

May be repeated once.

Prerequisites, Comm Studies 181 and 182. Credit, 1-3.

### 589. COMMUNICATION PROBLEMS OF THE DEAF AND HARD-OF-HEARING.

The physical, psychological, social, and educational problems and needs of the hearing handicapped.

Prerequisite, Comm Studies 250/550. Mr. Nober.

### 591. PEDIATRIC AUDIOLOGY.

Assessment and clinical management of infants and children with auditory disorders. Problems of differential diagnosis, screening techniques, conditioning procedures and electrophysiologic methods. Parental guidance and employment of amplification with children.

Prerequisites, Comm Studies 285 and 286/586.

### 592. LEARNING AND LANGUAGE DISABILITIES IN CHILDREN.

Learning disabilities associated with physical, psychological, and social etiologies. Problems of language development and cognitive disorders, remedial practices in reading and writing problems, and learning patterns of the culturally disadvantaged. Diagnostic assessment and educational processes outlined.

Mr. Nober.

### 595. STUTTERING.

Major theories of the etiology, diagnosis, and clinical management of stuttering.

Prerequisite, Comm Studies 182.

## Communication Studies

### GRADUATE FACULTY

KENNETH L. BROWN, *Associate Professor and Chairman of the Department of Communication Studies*, B.S., Syracuse, 1955; M.A., 1960; Ph.D., Northwestern, 1965.

VERNON E. CRONEN, *Associate Professor and Graduate Program Director*, B.A., Ripon College, 1963; M.A., 1968; Ph.D., Illinois, 1970.

JEFFREY P. BACAL, *Assistant Professor*, B.A., Dartmouth, 1968; M.A., 1970; Ph.D., Iowa, 1974.

VINCENT M. BEVILACQUA, *Professor*, B.A., 1957; M.A., Emerson, 1958; Ph.D., Illinois, 1961.

JANE BLANKENSHIP, *Professor*, B.A., Akron, 1956; M.A., 1957; Ph.D., Illinois, 1961.

JENNINGS BRYANT, *Assistant Professor*, A.B., Davidson College, 1967; M.Div., Louisville Presbyterian Theological Seminary, 1971; Ph.D., Indiana, 1974.

## GRADUATE SCHOOL

RICHARD L. CONVILLE, JR., *Assistant Professor*, B.A., 1965; M.A., Samford, 1968; Ph.D., Louisiana State, 1970.

LESLIE K. DAVIS, *Assistant Professor*, B.A., Slippery Rock State College, 1968; M.S., Indiana State University, 1969; Ph.D., Pennsylvania State, 1975.

RICHARD D. HARPER, *Assistant Professor*, B.A., Vermont, 1948; M.A., 1949; Ph.D., Wisconsin, 1951.

FERN L. JOHNSON, *Assistant Professor*, B.A., Minnesota, 1968; M.A., Northwestern, 1969; Ph.D., Minnesota, 1974.

JAMES E. LYNCH, *Professor*, B.A., 1948; M.A., 1949; Ph.D., Michigan, 1955.

RONALD J. MATLON, *Associate Professor*, B.A., Indiana State, 1960; M.S., 1962; Ph.D., Purdue, 1966.

NANCY T. MIHEVC, *Assistant Professor*, B.A., 1968; M.A., 1969; Ph.D., Illinois, 1974.

W. BARNETT PEARCE, *Associate Professor*, B.A., Carson-Newman College, 1965; M.A., 1968; Ph.D., Ohio University, 1969.

WILLIAM K. PRICE, *Assistant Professor*, B.A., Maryland, 1954; M.A., 1960; Ph.D., Wisconsin, 1964.

RONALD F. REID, *Professor*, B.A., Pepperdine College, 1950; M.A., New Mexico, 1951; Ph.D., Purdue, 1954.

MAURICE E. SHELBY, JR., *Associate Professor*, B.A., Washington, 1960; Ph.D., Ohio State, 1963.

HERMANN G. STELZNER, *Professor*, B.A., Emerson, 1953; M.A., 1955; Ph.D., Illinois, 1957.

RICHARD L. STROMGREN, *Assistant Professor*, B.A., Massachusetts, 1954; M.A., Northwestern, 1958.

The Department of Communication Studies offers programs leading toward the M.A. and Ph.D. degrees.

Graduate study leading to the Ph.D. in Communication Studies with a concentration in Communication and Rhetorical Theory emphasizes a combination of historical-critical and behavioral research methodologies for examining past and present phenomena of human communication.

Graduate study leading to the Ph.D. in mass communications emphasizes an interdisciplinary approach to the study of mass communications through which the graduate student interprets, consolidates, and makes more meaningful, information and research within the Department of Communication Studies and from other areas of the University interested in mass media. The program is designed to prepare students for academic careers and for research and development positions in commercial and public media.

The department requires a research tool. It is up to the student's Guidance Committee to require the specific competencies deemed appropriate to the candidate's research. For example, students doing quantitative research would probably need advanced work in statistics or computer science; students doing historical-critical research in classical rhetoric probably need a reading-knowledge of one or more languages.

Candidates for the M.A. degree select one of the following major areas of concentration: 1) mass communications, 2) communication and rhetorical theory, or 3) communication education.

Graduate work leading to an M.A. in mass communications provides the student with academic back-



## UNIVERSITY OF MASSACHUSETTS

ground for entering the communications industries in either educational or commercial media, and provides a foundation for doctoral study. The M.A. in Communication and Rhetorical Theory emphasizes theoretical, historical, and critical studies of these subjects and is designed primarily to prepare students for doctoral study and for careers in college and university teaching and research. Graduate work leading to the M.A. in Communication Education is a more general course of study to prepare candidates for secondary school teaching of interpersonal communication, oral interpretation, debate, theatre and mass communication.

Applicants to the graduate program should meet all requirements for admission to the Graduate School and either have a good undergraduate background in communication studies or proceed to correct deficiencies without graduate credit.

The M.A. degree is offered under a thesis and non-thesis option. Candidates must complete a minimum of 30 credits for both options. The thesis option allows up to six credits for the thesis. A minimum of 60 credits beyond the bachelor's degree, exclusive of credits for the dissertation, is required for the Ph.D. Plans of study are prepared individually in consultation with faculty advisers.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

##### 700. SPECIAL PROBLEMS.

Independent study in special subjects. No more than 9 credits may be applied toward the M.A. degree.

*Credit, 1-3 each semester; maximum credit, 9.*

##### 707. SEMINAR IN MASS COMMUNICATIONS.

Revolving topics in mass communications; research papers, reports. Course may be repeated for credit; credit not granted for the same topic twice.

Prerequisite, 9 upper-division hours in mass communications and permission of instructor.

##### 712. RHETORIC OF ARISTOTLE.

Intensive study of the *Rhetoric* in translation; related concepts in other works of Aristotle. Lectures, discussion, papers.

##### 713. THEORIES OF LANGUAGE AND STYLE.

Theories of language and style from ancient times to the present. Emphasis on their application to rhetorical theory and criticism.

Prerequisite, 12 credits in communication and rhetorical theory. Miss Blankenship.

##### 714. EXPERIMENTAL STUDIES IN PERSUASION THEORY.

Examination of quantitative research studies in persuasion. Attention to experimental research.

Prerequisites, Comm Studies 211/511 and 350/650.

Mr. Cronen.

##### 715. DIRECTING THE FORENSIC PROGRAM.

Problems related to forensic programs: coaching individual and group activities, judging, tournament administration, and administration of the entire forensics program.

Prerequisite, permission of instructor. Mr. Matlon.

##### 718. SEMINAR IN PUBLIC ADDRESS.

Selected topics in the history and criticism of public address.

Prerequisite, permission of instructor. May repeat for a total of 6 credits. Mr. Reid

##### 719. SEMINAR IN RHETORICAL THEORY.

Selected topics in rhetorical theory; detailed consideration of

## COMMUNICATION STUDIES

the relationship of rhetoric to other disciplines, specific concepts, periods, and figures.

Prerequisite, permission of instructor. May repeat for a total of 6 credits.

##### 720. SEMINAR IN MEDIA RESEARCH METHODS.

Historical, descriptive, critical, experimental, and quantitative mass communications research methodologies.

Prerequisite, 9 upper-division hours in mass communications and permission of instructor. May repeat for a total of 6 credits. Mr. Meyer.

##### 721. SEMINAR IN BROADCASTING.

Revolving topics pertaining to various political, social, and economic aspects of broadcasting; research papers, reports.

Prerequisite, 9 upper-division hours in mass communications and permission of instructor. Course may be repeated for credit, but students may not receive credit for the same topic twice.

##### 722. SEMINAR IN FILM.

Intensive study of topics in film history, theory, and criticism. Revolving topics.

Prerequisite, 9 upper-division hours in mass communications and permission of instructor. Course may be repeated; credit not granted for the same topic twice.

Mr. Bacal, Mr. Stromgren.

##### 733. MASS PERSUASION.

The process, functions, and effects of persuasion on a mass level. The role of the mass media.

Mr. Mevet

##### 734. FILM AND SOCIETY: THE CINEMA AS A SOCIAL FORCE.

The effective and reflective roles of film in society. Emphasis on the relationship of society to the structure, development, function, and effects of the motion picture.

Mr. Bohn.

##### 770. HISTORY OF COMMUNICATION EDUCATION.

Speech pedagogy from ancient Greece to the present. Emphasis on speech-communication education in America.

Mr. Brown

##### 771. SEMINAR IN COMMUNICATION PEDAGOGY.

Selected topics relevant to the principles and methods of teaching communication. Attention to communication and rhetorical theory.

Mr. Brown, Mr. Price.

##### 800. MASTER'S THESIS.

*Credit, 3-6.*

##### 810. SEMINAR IN RESEARCH TOPICS AND METHODS.

Desirable areas and topics of investigation; application methodology and bibliography. Tentative exploration of selected subjects. Offered for doctoral students as needed, with sections arranged for each of the principal areas of the department.

##### 812. SEMINAR IN CONTEMPORARY RHETORICAL PRACTICE AND CRITICISM.

Intensive study and analysis of the speaking and writing generated by a major public controversy, 1930 to the present.

Miss Blankenship, Mr. Stelzner

##### 900. DOCTORAL DISSERTATION.

*Credit, 18.*

#### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

##### 505. CLASSICAL RHETORICAL THEORY.

Major rhetorical theories from their emergence in ancient Greece to the late Roman Empire. Emphasis on the Sophists, Plato, Aristotle, Hermagoras, Cicero, Quintillian, and St. Augustine.

##### 507. RHETORIC AND SOCIAL CHANGE IN AMERICA.

A survey of the rhetorical strategies of various American social movements such as the American Revolution, the populist movement, and the civil rights movement.

Mr. Reid

## COMPARATIVE LITERATURE

### 511. CONTEMPORARY RHETORICAL THEORY.

Contemporary philosophical approaches to rhetorical theory. Selected major contemporary theorists such as Weaver, Richards, Burke, Duncan, McLuhan, and Perelman.

Miss Blankenship.

### 525. HISTORY AND DEVELOPMENT OF THE MOTION PICTURE.

The motion picture as a social force and as a form of art. Interrelationship and analysis of form, technique, and social impact of film. Selected screenings of representative film styles and content.

### 527. FILM THEORY AND CRITICISM.

Basic theories of film communication; various film modes and structures. Development of bases for evaluation of films according to communicative and aesthetic values. Prerequisite, Comm Studies 225/525.

Mr. Bacal, Mr. Stromgren.

### 528. MASS MEDIA IN SOCIETY.

Mass media as a major force in the American society. Emphasis on cultural, economic, political, and social effects. Prerequisite, Comm Studies 121.

Mr. Bryant.

### 532. BROADCASTING AND THE GOVERNMENT.

The role, function, and effect of regulation on broadcasting. Prerequisite, Comm Studies 121.

Mr. Shelby.

### 550. COMMUNICATION AND LANGUAGE THEORY.

The nature of speech and language, and the process involved in acquiring, understanding, and producing speech and language.

Prerequisite, permission of instructor.

Mr. Conville.

### 614. APPROACHES TO RHETORICAL CRITICISM.

Various critical approaches to rhetorical transactions: Historical, Formalist, Sociocultural, Psychological, and Archetypal.

### 650. BEHAVIORAL RESEARCH AND COMMUNICATION.

Introduction to research design and the practical problems in carrying out experimental and descriptive research in speech communication. Students pursue research projects either individually or in groups.

Prerequisite, 12 undergraduate credits in Communication Studies.

Mr. Cronen.

### 659. POLITICAL COMMUNICATION: MEDIA AND CAMPAIGNING.

Diffusion of persuasive political communications through standard and created media. Examination of campaign techniques (i.e., research on issues and themes, electorate polling, thematic media approaches, campaign strategies) in management and administration.

## Comparative Literature

### GRADUATE FACULTY

SARAH N. LAWALL, *Professor and Chairman of the Department of Comparative Literature*, B.A., Oberlin 1956; Ph.D., Yale, 1961.

WARREN D. ANDERSON, *Professor and Graduate Program Director*, B.A., Haverford, 1942; B.A., Oxon, 1949; M.A., Harvard, 1947; Ph.D., 1954.

DAVID R. LENSEN, *Associate Professor*, B.A., Princeton, 1967; M.A. 1970; Ph.D., 1971.

DON E. LEVINE, *Assistant Professor*, B.A., Columbia, 1964; M.A., Princeton, 1967; Ph.D., 1972.

DANIEL P. LUCID, *Assistant Professor*, B.A., Reed, 1968; M. Phil., Yale, 1971; Ph.D., 1972.

## GRADUATE SCHOOL

ELIZABETH P. MARTIN, *Assistant Professor*, B.S. Ed., Northwestern, 1960; M.A., California at Berkeley, 1964; Ph.D., 1972.

LUCIEN M. MILLER, *Associate Professor*, B.A., California at Berkeley, 1961; M.A., 1963; Ph.D., 1970.

C. WILLIAM MOEBIUS, *Associate Professor*, B.A., Lawrence (Wis.), 1963; Ph.D., S.U.N.Y. at Buffalo, 1969.

FREDERIC WILL, *Professor*, B.A., Indiana, 1949; Ph.D., Yale, 1954.

### ASSOCIATED FACULTY

ERIC M. BEEKMAN, *Associate Professor of Germanic Languages and Literatures*.

THOMAS CASSIRER, *Professor of French*.

ARTHUR F. KINNEY, *Professor of English*.

SARA LENNOX, *Assistant Professor of Germanic Languages and Literatures*.

JULIUS LESTER, *Lecturer in Afro-American Studies*.

PAUL MANKIN, *Professor of French*.

PAUL L. MARIANI, *Professor of English*.

WILLIAM E. NAFF, *Associate Professor of Japanese*.

ALEX R. PAGE, *Professor of English*.

DENNIS PORTER, *Associate Professor of French*.

EVA SCHIFFER, *Associate Professor of Germanic Languages and Literatures*.

SARA STURM, *Professor of French and Italian*.

### ASSOCIATED FIVE-COLLEGE GRADUATE FACULTY

EDITH KERN, *Doris Silbert Professor of Comparative Literature* (Smith College).

The Department of Comparative Literature offers graduate work leading to the degrees of Master of Arts and Doctor of Philosophy. Facilities and staff are available for specialized work in classical tradition studies and in medieval, Renaissance, Romantic, modern, and contemporary European literature, as well as in literary theory and criticism. Courses or seminars dealing with genres, themes, or movements are regularly offered as well. It is also possible to specialize in the study of Dutch literature or of classical and modern Chinese and Japanese literature. Graduate courses in Comparative Literature are open to all qualified graduate students and may, with prior approval of the other department or program concerned, be taken to meet a foreign language requirement.

### PREREQUISITES FOR ADMISSION TO THE M.A. OR PH.D. PROGRAM

(beyond the usual requirements of the Graduate School).

Undergraduate Degree: Applicants must possess a bachelor's degree or a recognized foreign equivalent, either with a major in a language-literature field or awarded upon completion of substantial literary studies.

**Languages:** All applicants are required to have studied at least two major languages besides English. One of the two must be either French or German. Ph.D. applicants should have completed at least three years' study of their first foreign language, and two of their second. M.A. applicants should have completed at least three years of their first foreign language and one year of their second. Ph.D. candidates are expected to show competence in one ancient language (Greek, Latin, Classical Chinese, etc.)

An entering student who does not show language competence by previous study may demonstrate competence in one of the following ways: a) An examination, normally to be administered by the appropriate language department; b) Two semesters of undergraduate courses beyond the grammar level, passed with a grade of B or better; c) One graduate course or seminar in the appropriate language department, passed with a grade of B or better.

**Grade Point Average:** The applicant should have a grade point average equivalent to at least 3.0 out of a possible 4.0.

**Examinations:** Applicants are required to have taken the Graduate Record Examination before applying, or to take it at the earliest opportunity thereafter. Non-native speakers of English are required to take the Test of English as a Foreign Language (TOEFL.)

**Written work:** Applicants are required to submit directly to the Department an example of their written work with their application. This should demonstrate critical handling of literary material, preferably including non-English texts. The paper need not be written in English.

#### THE DOCTOR OF PHILOSOPHY DEGREE

**Qualification:** Successful completion of the qualifying procedure entitles the student to M.A. degree candidacy, and enables him or her to proceed with preparations for the Preliminary Comprehensive Examination, beginning with the formation of a guidance committee. The qualifying procedure involves competence in foreign languages, and satisfactory performance on a qualifying examination to be based on reading lists prepared by the student and the student's advisory committee. The examination will include both written and oral portions: the total time for the examination will be about three hours.

**Languages:** Students are required to demonstrate competence in two foreign languages, one of which may be Latin or Greek. This requirement may be met by a satisfactory performance in a two-hour written examination; other options are also available. Students in European literature must offer a working knowledge of both French and German.

**Program of Study:** The balance among the main constituent elements of a candidate's course of study will necessarily vary with individual circumstances. The following kinds of competence, however, are taken to characterize the holder of a Ph.D. in Comparative Literature: a knowledge of one language and its literature sufficient to warrant the respect of specialists; a reading knowledge of three major European or Oriental languages (ancient or modern) in addition to English; a wide command of the literature of one main historical period; ability to make serviceable use of at least three literatures, one of which may be English; a reading competence in a classical language; and training in research method, literary translation, and problems of criticism.

**Requirements:** Work in the major literature requires historical coverage from the earliest literary forms of the language to the present, with emphasis either on a genre or on a major period, and a thorough reading knowledge of the language. Work in the second and third literatures requires coverage of the period or genre related to the field of emphasis in the major literature. Reading knowledge of the languages involved should be very good in the case of the second literature and good in the case of the third. Finally, work in Comparative Literature courses and seminars will be determined according to the candidate's needs in acquiring the ability to deal with the broad demands of the discipline and the more limited ones of his or her special field.

**Preliminary Comprehensive Examination:** The Comprehensive Committee works with the student to formulate the list of 10 topics on which the Comprehensive Examination is based. A topic is a conceptual issue of considerable breadth. The purpose of the individual topic is to permit the exploration and synthesis of a critical problem within a broad spectrum of literary expressions, works, authors, and traditions. More than one critical approach to individual literary texts shall be reflected among the 10 topics.

The examination will include both written and oral portions, and also a passage for textual analysis. Students have the option of writing substantial papers to satisfy up to four topics. Successful completion of this examination allows the candidate to proceed to the dissertation.

**The Dissertation:** The dissertation may deal with any subject in literary history, or with the comparison of texts, in the original languages, of works from two or more literatures. A translation dissertation may be proposed, provided that it is prefaced by an extensive introduction, with a level of analysis appropriate to a doctoral dissertation. The introduction should deal with theories and specific problems of the translation.

#### THE MASTER OF ARTS DEGREE

Two types of M.A. degrees are offered in Comparative Literature. Students who do not plan to proceed to the Ph.D. will normally choose the M.A. with thesis; the M.A. without thesis should be elected as a degree plan by students planning doctoral study.

**Program of Study:** A minimum of 30 graduate credit hours will be required in all cases. The following is to be included: 12 graduate credits in a major literature, 6 graduate credits in a second literature studied in the original language, and 6 graduate credits in Comparative Literature courses. One of the Comparative Literature courses must be Comparative Literature 676 (Theories of Comparative Literature); another must be a course that combines theoretical perspectives with practical criticism. Students who elect the M.A. without thesis must take at least 9 credits in a second literature and also in Comparative Literature.

**Examinations:** All candidates for the M.A. are required to take an examination that will include both written and oral portions: the total time for the examination will be about three hours.

**Thesis:** The thesis is intended to demonstrate ability to formulate and explore a specific literary problem. The student must present a brief prospectus to the advisory committee for approval. A thesis consisting of a translation preceded by a substantial critical introduction may be approved, subject to conditions similar to those applying to doctoral translation dissertations.



## COMPUTER AND INFORMATION SCIENCE

## GRADUATE SCHOOL

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY

##### 700. SPECIAL PROBLEMS.

Directed study of some problem in comparative literature. May be repeated for credit. *Credit, 2-6.*

##### 701. BIBLIOGRAPHY AND METHODS OF LITERARY RESEARCH.

Introduction to the bibliography and methodology of comparative studies in literature.

##### 702. LITERARY CRITICISM I: CLASSIC TO NEOCLASSIC.

Problems in critical theory prior to the modern period. Not necessarily chronological or limited to Occidental critics.

##### 703. LITERARY CRITICISM II: INTRODUCTION TO THE HISTORY OF CONSCIOUSNESS.

Modern crises of consciousness, ethics, and form, as manifested in seminal works of avant-garde criticism and fiction.

##### 704. CONTEMPORARY THEORIES OF LITERATURE.

Intensive study of theories of literature which have importance for contemporary criticism and scholarship.

##### 705. THEORY AND PRACTICE OF TRANSLATION.

The history of translation theory. Intensive practical experience in translating poetry and prose.

##### 890. SEMINAR.

Intensive, advanced study of a topic in comparative literature. *Credit, 3-6.*

##### 900. DOCTORAL DISSERTATION.

*Credit, 10.*

#### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

##### 621. RENAISSANCE PERSPECTIVES.

The tradition of the Middle Ages, the heritage of the Renaissance — the rhetoric of writing and the arts of reading and interpretation as handed down to the Renaissance.

##### 622. THE SHAPE OF THE RENAISSANCE.

Diversity and change of literary style in the 15th and 16th centuries. Emphasis on cultural continuity. An examination of critical method.

##### 631. THE ENLIGHTENMENT.

Characteristic ideas, themes, and attitudes in 18th-century European literature. Focus on major representatives of the Age of Reason.

##### 641. ROMANTICISM.

The Romantic movement in Western literature as exemplified by its principal figures from the age of Rousseau to 1850.

##### 642. FROM IDEALISM TO REALISM.

Developments such as realism, naturalism, aestheticism, and neo-Romanticism in the literatures of England, France, Germany, and Russia, seen against the background of 18th-century idealism.

##### 647. LITERATURE AND MUSIC.

Relations between literature and music from Plato to Samuel Beckett. Emphasis on the aesthetics of Schopenhauer and the Wagnerian synthesis.

##### 651. SYMBOLISM.

The development of symbolism in English, French, and German poetry of the 19th and 20th centuries.

##### 652. MODERN DRAMA.

Currents in Western drama since Ibsen: naturalism, symbolism, neo-Romanticism, expressionism, folk drama and fan-

tasy, epic realism, and the "grotesque" or "absurd" theatre are possible topics.

##### 661. CONTEMPORARY EUROPEAN NOVEL.

Commitment and innovation in the modern novel. The nature of literary and extraliterary influences, trends, and themes that define and establish the current major traditions of the novel.

##### 671. EUROPEAN EPIC POETRY.

Literary analysis of major classical and Renaissance epics. Emphasis on their intrinsic qualities as works of art. Specific epic techniques and the epic tradition.

##### 675. ANGLO-GERMAN LITERARY RELATIONS.

Subjects and problems common to two or more different national literatures. The interplay between text, language, history, and nationality.

##### 676. THEORIES OF COMPARATIVE LITERATURE.

Major theories concerning the nature and proper province of comparative literature. Emphasis on their significance for graduate study.

## Computer and Information Science

### GRADUATE FACULTY

ROBERT M. GRAHAM, *Professor and Chairman of the Department of Computer and Information Science*, B.A., Michigan, 1956; M.A., 1957.

CAXTON C. FOSTER, *Professor and Graduate Program Director*, B.S., Massachusetts Institute of Technology, 1950; M.S., Michigan, 1957; Ph.D., 1965.

MICHAEL A. ARBIB, *Professor, Director of the Center for Systems Neuroscience, and Adjunct Professor of Psychology*, B.S., University of Sydney, 1961; Ph.D., Massachusetts Institute of Technology, 1963.

LORI A. CLARKE, *Assistant Professor*, B.A., University of Rochester, 1969; Ph.D., Colorado, 1976.

WILLIAM L. KILMER, *Professor*, B.S., Pennsylvania State, 1954; M.S., 1955; Ph.D., Michigan, 1958.

HENRY F. LEDGARD, *Associate Professor*, B.S., Tufts, 1964; M.S., Massachusetts Institute of Technology, 1966; Ph.D., 1969.

ROBERT N. MOLL, *Assistant Professor*, B.S., Carnegie-Mellon, 1967; M.S., 1968; Ph.D., Massachusetts Institute of Technology, 1973.

EDWARD M. RISEMAN, *Associate Professor*, B.S., Clarkson College of Technology, 1964; M.S., Cornell, 1966; Ph.D., 1969.

D. N. SPINELLI, *Professor and Adjunct Professor of Psychology*, Liceum G. Parini, 1954; M.D. in Medicine and Surgery, University of Milan Medical School, 1958.

RICHARD L. TENNEY, *Assistant Professor*, B.A., California at Los Angeles, 1965; M.S., Cornell, 1969; Ph.D., 1972.

CONRAD A. WOGGIN, *Professor and Director of the University Computing Center*, B. Eng., Yale, 1949; M. Eng., 1951; Eng. D., 1955.

## UNIVERSITY OF MASSACHUSETTS

### ADJUNCT FACULTY

**RICHARD H. ECKHOUSE, JR.**, *Adjunct Associate Professor*, B.E.E., Cornell, 1962; M.S., Illinois, 1963; Ph.D., S.U.N.Y. at Buffalo, 1971.

**OLIVER G. SELFRIDGE**, *Adjunct Professor*, S.B., Massachusetts Institute of Technology, 1945.

**HAROLD STONE**, *Adjunct Professor and Professor of Electrical and Computer Engineering*.

The Department of Computer and Information Science (COINS) offers the M.S. and Ph.D. degree in the three focal areas of computer systems, theory of computation, and cybernetics. Comprehensive course offerings are available, and active research is on-going, in each of these areas, as well as in inter-area fields. Active collaboration is maintained with colleagues in such diverse schools and departments as Art, Business, Education, Electrical and Computer Engineering, Linguistics, Mathematics, Psychology, and Zoology. Students are encouraged to take advantage of these inter-departmental links to enrich their university experience.

Students in the graduate program have direct access to excellent computer facilities and a lively on-going series of guest seminars. In addition, most advanced students will wish to take part in the research seminars (700 A, B, C) in their own area of concentration.

To be admitted to full graduate status in COINS, candidates should be holders of B.S. or B.A. degrees, with good academic records and recommendations, and have either a major in Computer Science or exhibit a good knowledge of computer programming and college mathematics. Students are expected to have mastered the equivalent of COINS 122 and 202 and Math 167: Introduction to Linear Algebra (co-requisite, second semester of calculus).

Students who have already studied computer science will note that at most six credits may be transferred from other institutions, and these must be of a grade B or better. It is the policy of the department to grant such transfer credit sparingly, since the program is sufficiently rich for most students to be able to take a full 24 units of course credit to their advantage.

COINS has an *affirmative action goal* of increasing the number of women and minority members in the student body. There is an increasing realization of the crucial role played by technology in the complexities of modern society; and a consequent desire for involvement in such fields as computer and information science. Unfortunately, many otherwise excellent candidates are lost to the field because of a weak undergraduate background in mathematics. However, in most instances students with a capability for problem solving can master the necessary background in a semester or two if their academic standing in their undergraduate major is comparable to that of other students admitted to the COINS program.

To this end the department is developing a program

## COMPUTER AND INFORMATION SCIENCE

of background study in computer mathematics and programming, and invites applications from students in need of such a program, especially from women and minority members. Students admitted on this basis will be expected to complete their background study in one or two semesters, with performance at B average or better automatically entitling them to regular candidacy in the M.S. program. (Credits in background courses obtained during this period will *not* count towards COINS graduate degrees.)

### THE MASTER OF SCIENCE DEGREE PROGRAM

The following are the requirements for the M.S. degree in Computer and Information Science:

- (i) Each student shall take (or receive advanced standing in) the core courses 601, 602, and 603.
- (ii) Each student shall take two COINS 700 series courses other than 701.
- (iii) Each student shall take 6 units of COINS 701, Project. The project must be completed in one semester, with a grade of B or better. Students are required to plan their project in the semester preceding that in which they register for 701. A written proposal must be approved by two faculty members as first and second readers, and submitted to the Graduate Program Director by the preregistration day preceding the semester of registration.
- (iv) Each student shall take additional graduate courses, chosen with the approval of the adviser, to satisfy the 30-credit requirement for the M.S. degree. Each student must obtain a B grade average or better in the 24 units other than the project.
- (v) Students entering with deficiencies in the equivalent of COINS 122, 202, or Math 167 are required to remove these deficiencies by the end of their first semester. The credits so obtained do not count toward the 30 credits for the M.S. degree.

### THE DOCTOR OF PHILOSOPHY DEGREE

To be confirmed in their candidacy for the Ph.D. Degree, students must pass the Ph.D. qualifying exam, which is offered in March and October of every year. Students enrolled as M.S. candidates who wish to proceed to the Ph.D. program are advised to first take the examination within one year of completion of COINS 701; they normally are expected to pass the exam before being admitted to the second year of their Ph.D. candidacy.

In addition to course work appropriate to the M.S. degree, Ph.D. students are required to take some six 700-level courses from both within and without the department to lay a firm basis for thesis research. There is no formal language requirement for the degree. Students are discouraged from taking more than two or three years beyond the M.S. to complete their Ph.D. degree. M.S. candidates intending to proceed to the Ph.D. should choose their 701 projects with this time restriction in mind. Other conditions for the Ph.D. are as listed under general University requirements.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

### COURSES OPEN TO GRADUATE STUDENTS ONLY

## COMPUTER AND INFORMATION SCIENCE

### 700. SPECIAL SEMINARS.

Topics by arrangement. Recent advanced and current problems in a specialized field of computer and information science.

Prerequisite, permission of instructor. *Credit variable, 1-6.*

### 701. ADVANCED TOPICS IN COMPUTER SCIENCE.

A project-type course for second-year graduates. Moderately large projects of implementation, design of computers, languages, operating systems, cybernetic simulation, theoretical integration, etc.

Prerequisite, permission of instructor. *Credit, 6.*

### 711. SYNTACTIC ANALYSIS.

An introduction to the concepts and techniques of syntactical analysis with respect to context-free grammars, the cognitive processes involved in the analysis and generative algorithms of computer translators.

Prerequisites, COINS 301/601 and 210/510.

### 724. ADVANCED PROGRAMMING.

Use of list processing and associative computers. Design of interpreters and higher level languages. Topics vary.

Prerequisite, COINS 302/602.

### 741. COMPUTABILITY AND COMPLEXITY.

The idea of recursion; algebraic and machine characterizations; hierarchies of partial recursive functions; complexity of computation by both axiomatic and machine-oriented criteria; speed-up and gap theorems.

Prerequisites, COINS 301/601 or Math 381.

### 743. TOPICS IN THEORY OF COMPUTATION.

Algebraic automata theory; advanced topics in language theory; theory of problem-solving in hierarchically structured systems; theory of theorem proving. Topics vary from year to year.

Prerequisite, COINS 301/601.

### 762. FOUNDATIONS OF PROGRAMMING LANGUAGES.

Fundamental concepts underlying higher-level languages. Methods of syntactic and semantic definition; mathematical models of Scott and Strachey; models for assignment, transfer of control, block structure and procedures.

Prerequisites, COINS 301/601 and 302/602.

### 777. ADVANCED OPERATING SYSTEMS.

Systems analysis, feasibility studies and applicable techniques of operating systems. Input/output file control systems; on-line applications, case studies, design and use of extended machine language function facilities for systems programming.

Prerequisites, COINS 335/635 and 377/677.

### 782. COMPUTATIONAL CYBERNETICS.

Computer simulation models of the reticular formation; the frog's visual system; learning equations; a comparison of models of the cerebellum; archicortex and neocortex; statistical neuronal processing; action-oriented model of human vision.

Prerequisite, COINS 303/603.

### 784. PATTERN RECOGNITION.

Techniques of pattern recognition; optical character recognition; feature extraction and contextual cuing; automata and grammars for two-dimensional patterns; statistical decision theory; scene analysis.

Prerequisites, COINS 383/683 and 303/603.

### 790. SEMINAR ON COMPUTER AND INFORMATION SCIENCE.

Conferences, reports and lectures on topics not currently covered in regular courses.

Prerequisite, permission of instructor. *Credit, 1-6.*

### 795. SEMINAR ON IMPLICATIONS.

Interdepartmental studies of social and economic factors in

## GRADUATE SCHOOL

relation to computer-based solution of large-scale problems. Topics vary.

Prerequisite, permission of instructor.

### 900. DOCTORAL DISSERTATION.

*Credit, 10.*

## COURSES NOT FOR MAJOR CREDIT

### 422. INTRODUCTION TO PROBLEM SOLVING USING THE COMPUTER.

### 450. INTRODUCTION TO COMPUTER AND INFORMATION SCIENCE.

### 502. COMPARATIVE CONCEPTS IN PROGRAMMING LANGUAGES.

### 532. ALGORITHMIC METHODS FOR SCIENTISTS AND ENGINEERS.

## COURSES OPEN TO GRADUATE AND UNDERGRADUATE STUDENTS

### 501. ASSEMBLY LANGUAGE PROGRAMMING.

Input/output equipment, machine organization, logical design, elementary data structures, and assembly language programming. Lab involves hands-on experience with programs, loaders, and assemblers.

Prerequisite, COINS 122/422 or programming experience.

*Credit, 4.*

### 510. TRANSLATOR DESIGN.

A project-oriented course covering techniques of language definition and translation. Particular reference to symbolic assemblers and algebraic compilers.

Prerequisites, COINS 201/501 and 202/502.

### 533. MINI COMPUTERS.

The use of small-scale digital computers for data gathering, analysis and on-line control of experiments. Interfacing computers and logical design of input/output facilities.

Prerequisite, programming experience.

### 552. TOPICS IN NUMERICAL METHODS.

Computer-oriented numerical analysis, including linear algebra, solution of simultaneous equations, homogeneous equations, eigenvalues, solution of differential equations, and functional representations.

Prerequisite, COINS 122/422 or programming experience.

### 560. LINGUISTICS AND AUTOMATA.

An introduction to formal studies of the origins, properties, and structure of natural languages; phrase structure and transformational grammars; pushdown, linear-bounded and stack automata; grammatical behavior and pattern description.

Prerequisite, COINS 301/601.

### 575. COMBINATORIAL THEORY AND ITS APPLICATIONS.

The solution of problems of enumeration using permutations and combinations, generating functions, and recurrence relations. Introduction to graph theory, linear and dynamic programming. Block designs. Applications.

Prerequisite, COINS 301/601.

### 591. ECOLOGICAL CYBERNETICS.

Ecosystem population models; solutions of nonlinear differential equation systems arising in population biology; analytical formulations of ecosystem stability problems. Computer simulation projects encouraged.

Prerequisite, calculus; computer programming desirable.

### 601. FUNDAMENTALS OF COMPUTATION.

Algorithms, languages, and machines; recursion and induction; state diagrams, switching theory, and regular sets; trees; formal grammars; syntax and semantics; proving properties of programs.

Prerequisite, Math 167 or equivalent.



## UNIVERSITY OF MASSACHUSETTS

### 602. FUNDAMENTALS OF COMPUTING SYSTEMS

Core concepts of computer software and hardware, including syntax, semantics and implementation models; data structures and accessing strategies; operating systems, control programs and languages, and machine architecture.

Prerequisite, COINS 202/502; COINS 201/501 recommended.

### 603. FUNDAMENTALS OF CYBERNETICS.

Integrates brain analysis and artificial intelligence to convey a basic understanding of systems and neural networks, modelling, feedback; planning of complex behavior in the brains of animals and the control computers of robots.

Prerequisite, COINS 122 or background in biology or psychology.

### 604. FUNDAMENTALS OF INFORMATION.

Concepts of information theory with background in discrete probability theory; semi-groups applied to coding and automata theory; linear machines and codes.

Prerequisite, COINS 301/601.

### 620. DEVELOPMENT OF QUALITY SOFTWARE.

Notion of quality software; measurement of quality; top-down and other approaches to programming; structured programs; proofs of correctness; software engineering; psychology of programming.

Prerequisites, COINS 201/501 and 202/502.

### 635. COMPUTER ARCHITECTURE.

The various elements of computer design; the historical influence of certain real computers and the concepts behind them.

Prerequisite, COINS 302/602.

### 650. COMPUTATIONAL MODELLING.

Markov process, Random Walk and Monte Carlo techniques. Statistical techniques, distributions, and correlation coefficients. Brief introduction to simulation languages. Simple queues, n-person zero sum games. Applications.

Prerequisite, COINS 202/502.

### 660. COMPUTER GRAPHICS (ECE 660).

Basic organization of computer-driven graphical display systems. Methods for generation and manipulation of vectors and characters for real-time display. Data structures for picture and text processing.

Prerequisite, COINS 201/501.

### 677. INTRODUCTION TO OPERATING SYSTEMS.

A study of the programs and techniques needed to transform computer hardware into a comprehensive computer. Topics include input/output control systems, mono-programming, multi-programming, and multi-processing.

Prerequisite, COINS 302/602.

### 683. ARTIFICIAL INTELLIGENCE.

Game-playing by machines; problem solving by machine, theory of heuristic search; automatic theorem-proving; question answering systems; natural language processing; an introduction to robotics, vision and planning.

Prerequisite, COINS 303/603.

### 685. SPECIAL PROBLEMS.

(Topics by arrangement each semester.)

Prerequisite, permission of instructor. *Credit variable, 1-6.*

### 686. SPECIAL PROBLEMS.

(Topics by arrangement each semester.)

Prerequisite, permission of instructor. *Credit variable, 1-6.*

### 687. DATA AND INFORMATION STRUCTURES

(ECE 642).

Mathematical and practical concepts relevant to description and manipulation of data and information structures such as lists, trees, and graphs, and the relationship of these ideas to the constraints imposed by physical storage devices.

Prerequisites, COINS 301/601 and 302/602.

IN ADDITION TO THE ABOVE COURSES,

STUDENTS ARE ADVISED TO TAKE COURSES IN OTHER DEPARTMENTS SUCH AS:

## ECONOMICS

### Electrical and Computer Engineering

510. DIGITAL CIRCUIT THEORY.

644. PROGRAMMING STRUCTURES.

662. SELF-ORGANIZING SYSTEMS AND PATTERN RECOGNITION.

666. ANALOG AND HYBRID COMPUTERS

668. ADVANCED SWITCHING THEORY.

702. ALGEBRA AND CODING.

750. GRAPH THEORY AND ITS APPLICATIONS

### Linguistics

703. GENERATIVE PHONOLOGY

710. SEMANTICS AND GENERATIVE GRAMMAR

### Mathematics

511, 512. INTRODUCTION TO MODERN ALGEBRA

541. APPLIED ANALYSIS I

545, 546. APPLIED MATHEMATICS

551, 552. NUMERICAL ANALYSIS.

557. LINEAR PROGRAMMING AND THEORY OF GAMES

735. LATTICE THEORY.

745, 746. ADVANCED APPLIED MATHEMATICS

### Philosophy

672, 673. MATHEMATICAL LOGIC

### Psychology

711, 712. SENSORY PROCESSES.

715. PERCEPTION

725, 726. HUMAN INFORMATION PROCESSING.

746. QUANTITATIVE METHODS IN PSYCHOLOGY

750. PHYSIOLOGICAL PSYCHOLOGY.

752. THE NEUROANATOMICAL BASIS OF BEHAVIOR

753. PSYCHOPHARMACOLOGY

### Zoology

770. COMPARATIVE NEUROPHYSIOLOGY.

## Economics

### GRADUATE FACULTY

DONALD W. KATZNER, *Professor and Chairman of the Department of Economics*, B.A., Oberlin, 1959, M.A., Minnesota, 1962; Ph.D., 1965.

## ECONOMICS

MARSHALL C. HOWARD, *Professor and Graduate Program Director*, A.B., Princeton, 1941; Ph.D., Cornell, 1951.

NORMAN D. AITKEN, *Associate Professor*, B.A., Cincinnati, 1961; Ph.D., Tennessee, 1967.

SOLOMON BARKIN, *Professor*, B.S., College of The City of New York, 1928; M.A., Columbia, 1929.

MICHAEL H. BEST, *Associate Professor*, B.A., Washington, 1963; M.A., Oregon, 1967; Ph.D., 1969.

JOHN L. BLACKMAN, JR., *Associate Professor*, B.A., Haverford, 1930; M.A., 1948; Ph.D., Harvard, 1957.

SAMUEL S. BOWLES, *Professor*, B.A., Yale, 1960; Ph.D., Harvard, 1965.

JAMES C. COX, *Associate Professor*, B.A., California at Davis, 1965; M.A., Harvard, 1968; Ph.D., 1970.

JAMES CROTTY, *Assistant Professor*, B.S., Fordham, 1961; M.S., Carnegie-Mellon, 1963; Ph.D., 1973.

THOMAS E. DUSTON, *Assistant Professor*, B.S., Maine, 1962; M.A., S.U.N.Y. at Binghamton, 1967; Ph.D., Brown, 1972.

RICHARD C. EDWARDS, *Assistant Professor*, B.A., Grinnell, 1966; Ph.D., Harvard, 1972.

BRADLEY T. GALE, *Associate Professor*, B.S., Worcester Polytechnic Institute, 1964; M.A., Massachusetts, 1965; Ph.D., Rutgers, 1968.

HERBERT GINTIS, *Professor*, B.A., Pennsylvania, 1961; M.A., Harvard, 1962; Ph.D., 1969.

JOSEPHINE G. GORDON, *Assistant Professor*, B.A., Vassar, 1966; M.A., Washington, 1971; Ph.D., 1975.

VACLAV HOLESOVSKY, *Professor*, Diploma in Political Sciences, Paris, 1950; M.A., 1958; Ph.D., Columbia, 1964.

K. JANE HUMPHRIES, *Assistant Professor*, B.A., Newnham College, Cambridge, 1970; M.A., Cornell, 1973; Ph.D., 1973.

JAMES K. KINDAHL, *Professor*, B.A., Chicago, 1951; M.B.A., 1953; Ph.D., 1958.

LEONARD A. RAPPING, *Professor*, B.A., California at Los Angeles, 1956; M.A., Chicago, 1958; Ph.D., 1961.

STEPHEN A. RESNICK, *Professor*, B.S., University of Pennsylvania, 1960; Ph.D., Massachusetts Institute of Technology, 1964.

SIMON ROTTENBERG, *Professor*, B.A., George Washington, 1939; M.A., Harvard, 1948; Ph.D., 1950.

GEORGE I. TREYZ, *Associate Professor*, A.B., Princeton, 1958; Ph.D., Cornell, 1967.

CHE S. TSAO, *Associate Professor*, B.S., Chung Hsing University, 1955; M.S., Wisconsin, 1964; Ph.D., 1966.

RICHARD D. WOLFF, *Associate Professor*, B.A., Harvard, 1963; M.A., Stanford, 1964; M.A., Yale, 1967; Ph.D., 1969.

## GRADUATE SCHOOL

ARTHUR W. WRIGHT, *Associate Professor*, B.A., Haverford, 1960; Ph.D., Massachusetts Institute of Technology, 1969.

### FIELDS OF CONCENTRATION

Programs of graduate study in economics are offered in the following fields of specialization: Comparative Economic Systems; Econometrics; Economic Development; Economic History; Economic Theory; History of Economic Thought; Human Resource Economics; Industrial Organization and Regulation; International Economics; Labor Economics; Monetary Theory and Policy; Political Economy; Public Finance.

### THE MASTER OF ARTS DEGREE PROGRAM

#### *Entrance and Admission Requirements*

All entering students must have completed at least one semester of each of intermediate micro theory, intermediate macro theory, and calculus. All applicants must take the verbal and quantitative Graduate Record Examinations; the advanced test is not required. Foreign applicants, in addition, must take the Test of English as a Foreign Language (TOEFL) and achieve a minimum score of 550.

#### *Degree Requirements*

All candidates for the M.A. are required to complete 36 graduate credits subject to the following restrictions: Twelve credits must be earned in 700 to 900 series courses; candidates must take one semester each of microeconomic theory, macroeconomic theory, mathematical methods in economics, and econometrics; 21 of the credits must be taken within the Department of Economics. The candidate must earn grades of B or better in the four required courses, and maintain a 3.0 average overall. M.A. candidates have the option of submitting a thesis, which counts for between 6 and 9 semester credit hours.

### THE DOCTOR OF PHILOSOPHY DEGREE PROGRAM

#### *Entrance and Admission Requirements*

Requirements are the same as for the M.A. Program, plus at least one semester of linear algebra. Persons applying for the Ph.D. Program without the M.A., may be required to complete the M.A. Program first.

#### *Degree Requirements*

Ph.D. candidates write comprehensive examinations in micro and macro economic theory, economic history, and the history of economic thought. The candidate may offer Marxian value theory on the comprehensives as an alternative to heavier concentration in micro or macro theory. Course work in mathematical methods in economics and also in econometrics is required and is scheduled so that the student will have taken these tool courses before he takes the comprehensive examinations. These examinations are given in January of each year; for the new student without any previous graduate work the examinations thus occur after three semesters of course work. A requirement of accomplishment in at least two fields is met by satisfactory completion of at least two courses in each field. The doctoral dissertation must be successfully defended in an

## UNIVERSITY OF MASSACHUSETTS

## ECONOMICS

oral examination. One year's full-time residence is required.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### GRADUATE COURSES

(For either major or minor credit)

(Open to undergraduates with instructor's permission)

#### 700. SPECIAL STUDIES IN ECONOMICS.

*Credit, 2-9 each semester.*

#### 701 (I), 702 (II). MICROECONOMIC THEORY.

A systematic development of the theory of the consumer, the firm, the industry, and their interactions.

Prerequisite, Econ 203. *Credit, 3 each semester.*

#### 705 (I), 706 (II). MACROECONOMIC THEORY.

Nature, construction, and use of social accounting systems. A systematic development of static and dynamic theories of aggregative economic behavior and their applications.

Prerequisite, Econ 212, 204, or equivalent. *Credit, 3 each semester.*

#### 711. MONETARY THEORY.

Relationship among the supply of money, interest rates, capital market, price levels and output.

Prerequisite, Econ 705.

#### 712. MONETARY AND FISCAL POLICY

An analytical treatment of the effects of government and central bank policies intended to achieve such objectives as price stabilization and economic growth.

Prerequisite, Econ 312, 612 or permission of instructor. Mr. Crotty, Mr. Rapping.

#### 721. INTERNATIONAL FINANCE.

An analysis of the properties of foreign exchange markets, adjustment mechanisms, speculation, capital flows, transfer problems and the relationship between balance of payments correctives and domestic policy goals.

Prerequisite, Econ 204 or permission of instructor. Mr. Aitken.

#### 722. INTERNATIONAL TRADE THEORY

The pure theory of international trade. The reasons for trade, the gains from trade, factor price equalization, commercial, policy, trade and economic development, and customs unions.

Prerequisite, Econ 322 or 622 or permission of instructor. Mr. Aitken.

#### 731. INDUSTRIAL ORGANIZATION

A survey of the literature on the market structure, conduct, and performance of industry.

Prerequisite, Econ 203 or 503 or permission of instructor. Mr. Howard, Mr. Gale.

#### 732. INDUSTRIAL REGULATION.

A survey of the literature on controls extended by government over the business sector of the economy.

Prerequisite, Econ 203 or 503 or permission of instructor. Mr. Howard, Mr. Gale.

#### 741. COLLECTIVE BARGAINING.

The legal background of collective bargaining, the process, subject matter, and problems involved. Individual case problems.

Prerequisite, Econ 141. Mr. Blackman.

#### 743. WAGE THEORY AND WAGE RELATIONSHIPS.

Theoretical and institutional study of theories of wages and wage structure.

Prerequisite, Econ 141. Mr. Blackman.

#### 745. LABOR DISPUTE SETTLEMENT.

Ways of settling labor disputes, including grievance proceed-

ings, arbitrations, and presidential intervention.

Given alternate years (not given 1973-74).

Prerequisite, Econ 141. Mr. Blackman.

#### 746. COMPARATIVE LABOR MOVEMENTS.

Labor movements in various countries with an analysis of their similarities and differences.

Prerequisites, Econ 141 and History 336. Mr. Barkin.

#### 747. MANPOWER DEVELOPMENT.

A critical examination of current manpower policies and problems. The quantity and quality of manpower resources, problems of labor employment and mobility. Adjustment policies and research tools are reviewed.

Prerequisite, Econ 141. Mr. Barkin.

#### 751. MATHEMATICAL METHODS IN ECONOMICS.

The various modern applications of mathematics to economic analysis. Both static and dynamic processes.

Prerequisites, Econ 301, 251, or equivalent, one year of college mathematics, and permission of instructor.

Mr. Crotty, Mr. Cox, Mr. Smith, Mr. Tsao.

#### 752 (I), 753 (II). ECONOMETRICS

The application of modern statistical methods to micro- and macroeconomic theory formulated in mathematical terms.

Prerequisite, Econ 251 or permission of instructor.

*Credit, 3 each semester.*

Mr. Gale, Mr. Kindahl, Mr. Treys, Mr. Tsao.

#### 761 (I), 762 (II). GENERAL ECONOMIC HISTORY.

Topics in the history of economic activity in the Western World.

Prerequisite, Econ 261.

Mr. Edwards, Mr. Resnick, Mr. Wolff.

#### 765. ECONOMIC DEVELOPMENT: STRUCTURAL PROBLEMS.

The concept of economic development and the structural changes needed in underdeveloped countries to permit development.

Prerequisite, 15 hours of economics.

Ms. Humphries, Mr. Morris, Mr. Resnick.

#### 766. ECONOMIC DEVELOPMENT: POLICY ISSUES.

Policy decisions involved in efforts of underdeveloped countries to induce development.

Prerequisite, Econ 765.

Ms. Humphries, Mr. Morris, Mr. Resnick.

#### 773. THEORIES OF ECONOMIC SYSTEMS.

The theory of alternative economic systems, of national economic planning, and of resource allocation under different systems.

Prerequisite, Econ 172. Mr. Holesovsky, Mr. Wright.

#### 774. SELECTED TOPICS IN SOVIET AND EAST-

##### EUROPEAN ECONOMIES.

Application of advanced economic theory to selected major problems of planned economics of the Soviet type.

Prerequisites, Econ 172, 173. Mr. Holesovsky.

#### 781 (I), 782 (II). HUMAN RESOURCE AND LABOR

##### MARKET ECONOMICS.

A theoretical and empirical analysis of human resource and labor market problems using primarily the tools developed in microeconomics and statistics. First semester is a general survey of research in the area; second semester is an intensive analysis of selected topics.

Prerequisite for 781 — Econ 201/501 or permission of instructor. Prerequisite for 782 — Econ 781 or permission of instructor.

*Credit, 3 each semester.*

#### 785. ECONOMIC MODELS OF NATURAL RESOURCES AND THE ENVIRONMENT

Theoretical economic models of the institutional, technological, and economic features of natural-resource utilization. Economic analysis of public-policy problems. Public control



## ECONOMICS

techniques. Some degree of mathematical sophistication required. Mr. Cox.

### 795. TOPICS IN THEORETICAL WELFARE ECONOMICS.

Recent developments in theoretical welfare economics, following introduction to Pareto optimum conditions in general equilibrium. Properties of allocation mechanisms and their adequacy for achieving Pareto optima. Prerequisites, Econ 701, 702. Mr. Wright, Mr. Cox.

797. TOPICS IN THE ECONOMICS OF UNCERTAINTY. Recent developments in the theory and application of expected utility and decision theory. Discussion of experimental studies of choice under uncertainty. Some degree of mathematical sophistication required. Prerequisite, Econ 701, 702. Mr. Cox.

801. HISTORY OF ECONOMIC THOUGHT. Treatment in depth of various topics within the history of economic thought. Mr. Bowles, Mr. Gintis, Mr. Wolff.

803 (I), 804 (II). SEMINAR IN ECONOMIC THEORY. Development of models of economic processes, with emphasis on analysis in depth. Specific subject matter may vary from year to year.

*Credit, 3 each semester.*  
Mr. Bowles, Mr. Gintis, Mr. Rapping.

813 (I), 814 (II). PUBLIC FINANCE. Theory of public goods and non-market allocation. Normative models of public expenditure and taxation. The integration of equity and efficiency considerations in evaluation of tax-expenditure programs. Social discount rates and shadow prices of resources used in the public sector. The structure and incidence of U.S. taxes. Discussion of tax reform proposals. Fiscal federalism and proposals for federal revenue-sharing. Prerequisite, Econ 701 or permission of instructor.

*Credit, 3 each semester.* Mr. Cox.

### 823 (I), 824 (II). POLITICAL ECONOMY OF CAPITALISM.

Mutual interaction of social relations of production, forces of production, and class. Roles of the state, surplus and capital accumulation, imperialism, sexism, racism in development and maintenance of capitalist system.

Mr. Bowles, Mr. Gintis.

### 897 (I), 898 (II). SEMINAR IN QUANTITATIVE ECONOMICS.

For advanced students with interest in econometrics. Weekly seminars are of two kinds: (1) lectures on advanced topics, especially new theoretical developments; (2) discussion of econometric and other empirical studies in process by members of the seminar, by other students and faculty, and by visiting speakers. Emphasis on the use of econometric tools in economic research.

Prerequisite, Econ 753 or permission of instructor.

*Credit, 3 each semester.* Mr. Gale, Mr. Treyz.

### 900. DOCTORAL DISSERTATION.

*Credit, 15.*

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

#### 505. MARXIAN ECONOMICS.

Exposition of the Marxian economic theory in modern idiom. Comparison of methodological assumptions and conceptualization of economic phenomena in Marx and in "mainstream economics." Prerequisite, Econ 103.

Mr. Bowles, Mr. Best, Mr. Holesovsky, Mr. Wolff.

#### 511. MONEY AND BANKING.

The development and operation of the monetary and banking systems of the United States; problems of achieving full employment and price stability through monetary controls.

Ms. Humphries.

## GRADUATE SCHOOL

#### 512. MONEY, INCOME, AND MONETARY POLICY.

The relationships among money, income, and monetary policy, and among individuals, banks, money markets, governments and central banks.

Prerequisite, either Econ 211 or Finance 210.

#### 531. SOCIAL CONTROL OF BUSINESS.

The formal and informal methods and efforts to maintain, supplement, and moderate competition, and the substitution of regulation and public enterprises for competition.

Prerequisite, Econ 103. Mr. Edwards, Mr. Howard.

#### 532. THE STRUCTURE OF AMERICAN INDUSTRY.

Business enterprise, market competition, and economic development in American industries. The social effectiveness of industries analyzed through measures of industrial structure and market performance.

Prerequisites, Econ 103 and 203 recommended.

Mr. Edwards, Mr. Gale, Mr. Howard.

#### 542. LABOR LAW AND LEGISLATION.

Economic effects and historical survey of Federal and state laws and an analysis of important court decisions.

Prerequisite, Econ 141, or permission of instructor.

Mr. Blackman.

#### 552. ECONOMETRICS.

The application of mathematical and statistical methods to economic theory. Emphasis on the application to both microeconomic and macroeconomic policy issues.

Prerequisite, permission of instructor.

Mr. Gale, Mr. Tsao.

#### 561. EUROPEAN ECONOMIC EVOLUTION.

Evolution of economic organization in agriculture, industry, and commerce; the surrounding social and institutional life.

Prerequisites, Hist 100 or 101 or an economics course.

Mr. Resnick, Mr. Wolff.

#### 562. AMERICAN ECONOMIC HISTORY.

An analytical approach to structural change, economic growth, and the development of market institutions in the United States from colonial times to the present.

Prerequisite, Econ 100 or 103.

Mr. Edwards.

#### 566. ECONOMIC DEVELOPMENT.

Economic problems of underdeveloped countries and the policies necessary to induce growth. Individual projects required.

Prerequisite, Econ 100 or 103.

Ms. Humphries, Mr. Best, Mr. Morris, Mr. Resnick.

#### 567. LATIN AMERICAN ECONOMIC DEVELOPMENT.

Development of the Latin American economies with emphasis on the central problems of the various economies and proposed economic programs.

Prerequisite, Econ 266 or permission of instructor.

Mr. Best.

#### 570. ECONOMICS OF PLANNING.

Theoretical analysis of the Soviet economy: growth models; measurement of growth and factor productivity; centralized planning and decentralization; investment criteria; foreign trade; other.

Prerequisites, Econ 103 or 203, or permission of instructor.

Mr. Holesovsky, Mr. Wright.

#### 571. COMPARATIVE ECONOMIC SYSTEMS.

Evaluation of the performance of alternative economic systems in theory and practice. Problems of planning in the advanced economies of the United States, Western Europe, and Soviet area.

Prerequisite, Econ 103.

Mr. Wright, Mr. Holesovsky.

#### 581. REGIONAL ECONOMICS.

The process of regional economic growth; location theory and basic techniques of regional analysis; public and private area development programs.

Prerequisite, Econ 103; Econ 203 recommended.

Mr. Burghardt.

## UNIVERSITY OF MASSACHUSETTS

**606. DEVELOPMENT OF ECONOMIC THOUGHT.**  
Development of economic analysis since 1500. Main currents in the evolution of mercantilistic, Physiocratic, classical, neo-classical, Marxian, and Keynesian economic thought.

Mr. Bowles, Mr. Gintis, Mr. Wolff.

### 612. PUBLIC FINANCE.

Principles of public revenues and expenditures; systems and problems of taxation; use of taxes; expenditures, debt policy to provide full employment; economic growth and price stability.

Prerequisite, Econ 103.

Mr. Cox, Mr. Ray.

### 614. STATE AND LOCAL PUBLIC FINANCE.

State and local government revenue and expenditure programs. Individual research projects relating to Massachusetts or surrounding states required.

Prerequisite, Econ 100 or 103.

Mr. Ray.

### 621. INTERNATIONAL TRADE AND ECONOMIC POLICY.

Intermediate theory of international trade, including the analysis of the balance of payments mechanism, pure non-monetary theory and its application to problems of commercial policy.

Prerequisites, Econ 203 and 321.

Mr. Aitken.

### 638. ECONOMICS OF HEALTH.

Economic aspects of health care and ill-health and social policies relative to health care and prevention of ill-health.

Mr. Duston.

### 641. ECONOMIC SECURITY.

Public and private programs to prevent or alleviate economic insecurity, including poverty, substandard incomes, and economic contingencies.

Mr. Blackman.

### 645. HUMAN RESOURCES ECONOMICS.

Private and social means for providing access to higher education, housing, medical care, and improved environment. Poverty, population concentration, and discrimination as barriers. Policies and priorities in human resource development.

Prerequisite, Econ 103 or equivalent.

Mr. Barkin, Mr. Duston, Mr. Oaxaca.

### 647. ECONOMICS OF THE LABOR MARKET

A theoretical and empirical analysis of labor markets, utilizing primarily the tools developed in microeconomics, including an introduction to labor-market data and to the formulation and testing of economic models.

Prerequisite, Econ 203.

### 682. SEMINAR IN URBAN & REGIONAL ECONOMICS.

In-depth study of varied aspects of urban and regional economics. Topics to be determined by interests of participants.

Prerequisites, Econ 103 and 203, or permission of instructor.

Ms. Gordon.

## Education

### GRADUATE FACULTY

**LOUIS FISCHER**, *Professor and Acting Dean of the School of Education*, B.A., Stanford, 1949, LL.B., 1951, M.A., 1954, Ph.D., 1958.

**GRACE J. CRAIG**, *Associate Professor and Acting Associate Dean*, B.A., Massachusetts, 1959, M.S., 1962, Ph.D. 1967.

**NORMA JEAN ANDERSON**, *Professor and Assistant Dean for Graduate Affairs*, B.S., Illinois, 1956, M.Ed., 1961; Ed.D., 1966.

**RICHARD J. CLARK, JR.**, *Associate Professor and Assistant Dean for Teacher Education*, B.A., Amherst, 1960; M.Ed., Harvard, 1961; Ed.D., Stanford, 1969.

## EDUCATION

**DWIGHT W. ALLEN**, *Professor*, B.A., Stanford, 1953, M.A., 1957; Ed.D., 1959.

**ALFRED S. ALSCHULER**, *Professor*, B.A., Amherst, 1961, M.A., Harvard, 1963; Ph.D., 1967.

**G. ERNEST ANDERSON, JR.**, *Professor*, B.A., Amherst, 1950; M.A.T., Harvard, 1955; Ed.D., 1955.

**ALBERT S. ANTHONY**, *Professor*, B.S., Trinity, 1937; M.A.T., Harvard, 1947; Ed.D., 1955.

**KENNETH H. BLANCHARD**, *Professor*, B.A., Cornell, 1961; M.A., Colgate, 1963; Ph.D., Cornell, 1966.

**LINDA SUE BLANE**, *Assistant Professor*, B.A., Miami, 1963, M.S., 1965; Ed.D., Florida, 1967.

**LIANE BRANDON**, *Assistant Professor*, A.B., Boston, 1962; M.Ed., 1967.

**R. MASON BUNKER**, *Associate Professor*, B.S., Farmington State, 1959; M.Ed., Maine, 1965; Ed.D., Illinois, 1970.

**SUSAN CAMPBELL**, *Assistant Professor*, B.A., Drew, 1962, M.A., Temple, 1963; Ph.D., Massachusetts, 1967.

**EMMA CAPPELLUZZO**, *Professor*, B.S., Boston, 1955, M.Ed., Arizona, 1959; Ed.D., 1965.

**DONALD CAREW**, *Professor*, B.A., Ohio, 1955, M.A., 1956, Ed.D., Florida, 1962.

**ROBERTA A. COLLARD**, *Associate Professor*, B.S., Texas, 1940; Ph.D., Chicago, 1962.

**REGINALD DAMERELL**, *Associate Professor*, B.A., Columbia, 1946.

**DAVID E. DAY**, *Associate Professor*, B.S., State University of New York at Brockport, 1952, M.S., 1955, Ed.D., Wayne State, 1962.

**LARRY DYE**, *Associate Professor*, M.Ed., Massachusetts, 1971, Ed.D., 1972.

**S. PHILIP EDDY**, *Associate Professor*, B.A., Nebraska State at Wayne, 1951, M.A., Columbia, 1956.

**JEFFREY W. EISEMAN**, *Assistant Professor*, B.A., Stanford, 1962, M.A., Michigan, 1964, Ph.D., 1971.

**PORTIA ELLIOTT**, *Assistant Professor*, B.A., Fisk, 1969, M.A., Michigan, 1970, Ed.D., Massachusetts, 1973.

**KENNETH A. ERTEL**, *Professor*, B.S., Minnesota, 1953, M.Ed., Eastern Washington College of Education, 1960, Ed.D., Washington State, 1967.

**DAVID R. EVANS**, *Associate Professor*, B.S., Oberlin, 1959, M.S., Illinois, 1961, Ph.D., Stanford, 1969.

**JUDITH EVANS**, *Assistant Professor*, B.S., Minnesota, 1963, M.A., Stanford, 1966; Ed.D., Massachusetts, 1973.

**ARTHUR W. EVE**, *Associate Professor*, B.Ed., Chicago Teachers College, 1957; M.A., Chicago, 1961; Ph.D., 1967.

**WILLIAM V. FANLOW**, *Associate Professor*, A.B., Chapman College, 1959; M.A., Stanford, 1961; Ph.D., 1967.

**GEORGE E. FORMAN**, *Associate Professor*, B.S., Louisiana State, 1963; Ph.D., Alabama, 1967.

**RONALD H. FREDRICKSON**, *Professor*, B.S., Kansas State Teachers, 1953, M.S., 1959, Ph.D., 1963.

## EDUCATION

- NATHANIEL S. FRENCH, *Associate Professor*, B.A., Black Mountain College, 1936.
- ATRON GENTRY, *Professor*, B.A., California State at Los Angeles, 1966; Ed.D., Massachusetts, 1970.
- JUDITH GOURLEY, *Assistant Professor*, B.A., Northern Illinois, 1965; M.A., Cornell, 1971; Ph.D., 1974.
- WILLIAM GREENE, *Assistant Professor*, B.A., North Carolina, 1966; M.S., Michigan State, 1970; Ph.D., 1971.
- MICHAEL GREENEBAUM, *Assistant Professor and Principal, Mark's Meadow School*, B.A., Harvard, 1955; M.A.T., 1956; Ed.D., Massachusetts, 1972.
- WILLIAM E. GRIFFITHS, *Associate Professor*, B.A., Pennsylvania State, 1949; M.Ed., 1950; Ed.D., Pennsylvania, 1963.
- DONALD E. HALL, *Assistant Professor*, B.S., Gorham Teachers, 1954; M.Ed., 1955; Ed.D., Boston, 1965.
- RONALD K. HAMBLETON, *Associate Professor*, B.A., University of Waterloo, 1966; M.A., Toronto, 1967; Ph.D., 1969.
- JACK HRUSKA, *Associate Professor*, B.A., Michigan State, 1956; M.A., Colorado State College, 1960; Ph.D., Michigan State, 1969.
- THOMAS E. HUTCHINSON, *Associate Professor*, B.A., Rutgers, 1959; M.Ed., Boston, 1961; Ed.D., Harvard, 1969.
- ALLEN E. IVEY, *Professor*, B.A., Stanford, 1955; Ed.D., Harvard, 1959.
- ROBERT D. JACKSON, *Assistant Professor*, B.S., Alabama A. & M., 1967; M.Ed., Virginia, 1970; Ed.D., George Washington, 1976.
- BYRD L. JONES, *Professor*, B.A., Williams, 1960; Ph.D., Yale, 1966.
- DANIEL C. JORDAN, *Professor*, B.Mus., Wyoming, 1954; B.A., Oxford, 1959; M.A., Chicago, 1960; Ph.D., 1964.
- ALFRED L. KARLSON, *Assistant Professor*, B.A., Antioch, 1964; M.Ed., Tufts, 1966; Ph.D., Chicago, 1971.
- DAVID KINSEY, *Associate Professor*, B.A., Oberlin, 1954; M.A., Yale, 1957; Ph.D., Harvard, 1965.
- RICHARD D. KONICEK, *Associate Professor*, B.S., Illinois, 1953; M.S., 1954; Ed.D., Columbia, 1967.
- WILLIAM G. KORNEGAY, *Professor*, B.A., North Carolina, 1949; M.Ed., 1957; Ph.D., 1959.
- WILLIAM LAUROESCH, *Associate Professor*, B.A., Colgate, 1942; M.A., Syracuse, 1947; Ed.D., New York, 1956.
- CASSELL LAWSON, *Assistant Professor*, B.A., Langston University, 1959; M.S.Ed., Indiana, 1970; Ph.D., Notre Dame, 1974.
- LAWRENCE F. LOCKE, *Professor of Physical Education and of Education*, B.S., Springfield College, 1952; M.Ed., 1953; Ph.D., Stanford, 1961.
- BARBARA LOVE, *Associate Professor*, B.A., Arkansas State A. M. & N. College, 1965; M.A., Arkansas, 1967; Ed.D., Massachusetts, 1972.
- WILLIAM J. MASALSKI, *Associate Professor*, B.S., Central Connecticut State, 1956; M.A., Fairfield, 1960; Ed.D., Massachusetts, 1970.

## GRADUATE SCHOOL

- LYNNE MILLER, *Assistant Professor*, B.A., Pennsylvania, 1967; M.A.T., Harvard, 1969; Ed.D., Massachusetts, 1975.
- PAMELA MILLS, *Assistant Professor*, B.S., Ohio State, 1967; M.A., 1971; Ph.D., North Carolina, 1974.
- ROBERT MILTZ, *Assistant Professor*, B.A., Stanford, 1964; M.A., 1965; Ed.D., 1971.
- SARAH NIEVES, *Assistant Professor*, B.A., Puerto Rico, 1958; M.A., 1970; Ed.D., Columbia, 1974.
- ENA NUTTALL, *Assistant Professor*, C.A., Puerto Rico, 1958; M.A., Radcliffe, 1960; M.Ed., Boston, 1965; Ed.D., 1969.
- IRENE NYSTROM, *Lecturer*, B.S., Utah, 1961; M.A., Stanford, 1963; M.A., San Francisco State College, 1965; Ed.D., State University of New York at Albany, 1972.
- ELLIS G. OLIM, *Professor*, B.A., Harvard, 1931; M.A., Roosevelt, 1960; Ph.D., Chicago, 1965.
- GENE ORRO, *Associate Professor*, B.S., DePaul, 1961; Ph.D., California School of Professional Psychology, 1973.
- HOWARD A. PEELLE, *Associate Professor*, B.S., Swarthmore, 1965; Ed.D., Massachusetts, 1971.
- KALIM QAMAR, *Assistant Professor*, M.Sc., West Pakistan Agricultural University, 1966; M.S., American University of Beirut, 1972; Ph.D., Cornell, 1975.
- MARY QUILLING, *Associate Professor*, B.A., Mount Holyoke, 1958; M.S., Wisconsin, 1965; Ph.D., 1973.
- S. PATTABI RAMAN, *Assistant Professor*, B.Sc., University of Delhi, 1952; M.Sc., University of Calcutta, 1955; Ph.D., 1960; Ed.D., Massachusetts, 1974.
- HORACE B. REED, *Professor*, B.A., Antioch, 1943; M.S., Putney Graduate School of Teacher Education, 1953; Ed.D., Harvard, 1959.
- MASHA RUDMAN, *Associate Professor*, B.A., Hunter, 1953; M.S., 1956; Ed.D., Massachusetts, 1970.
- DAVID M. SCHIMMEL, *Professor*, B.A., Duke, 1955; J.D., Yale, 1958; B.H.L., Hebrew Union, 1967.
- KLAUS SCHULTZ, *Associate Professor*, A.B., California at Berkeley, 1957; Ph.D., 1964.
- DAVID F. SCHUMAN, *Associate Professor*, B.A., Tulsa, 1964; M.A., California at Berkeley, 1966; Ph.D., 1971.
- HARVEY B. SCRIBNER, *Professor*, B.A., Farmington State Teachers College, 1946; M.A., Maine, 1951; Ed.D., Boston, 1960.
- EARL SEIDMAN, *Professor*, B.A., Oberlin, 1959; M.A.T., Harvard, 1960; Ph.D., Stanford, 1967.
- SIDNEY B. SIMON, *Professor*, B.A., Pennsylvania State, 1949; M.Ed., 1952; Ed.D., New York, 1958.
- RUDINE SIMS, *Associate Professor*, B.S., West Chester State College, 1959; M.S., Pennsylvania, 1964; Ed.D., Wayne State, 1972.
- ROBERT SINCLAIR, *Associate Professor*, B.S., Miami, 1960; M.E., 1961; Ed.D., California at Los Angeles, 1968.



## UNIVERSITY OF MASSACHUSETTS

JUDITHE D. SPEIDEL, *Associate Professor*, B.A., Smith, 1944; M.A., San Jose State College, 1961; M.A., Stanford, 1962; Ph.D., 1969.

DONALD STREETS, *Assistant Professor*, B.S., Indiana, 1956; M.A., Notre Dame, 1965; Ed.D., Massachusetts, 1971.

PATRICK J. SULLIVAN, *Associate Professor*, B.A., Georgetown, 1960; M.A., California at Berkeley, 1962; Ph.D., 1967.

BOB SUZUKI, *Associate Professor*, B.S., California at Berkeley, 1960; M.S., 1962; Ph.D. California Institute of Technology, 1967.

HARIHARAN SWAMINATHAN, *Assistant Professor*, B.S., Dalhousie, 1965; M.S., Toronto, 1966; M.Ed., 1968; Ph.D., 1971.

LAVERNE J. THELEN, *Professor*, B.S., Nebraska State at Wayne, 1949; M.A., Nebraska, 1956; Ed.D., 1961.

WILLIAM L. THUENMEL, *Associate Professor*, B.S., Michigan State, 1958; M.A., 1965; Ph.D., 1970.

BARBARA TURNER, *Associate Professor*, B.A., Antioch, 1962; M.A., DePauw, 1965; Ph.D., Chicago, 1969.

RICHARD O. ULIN, *Professor*, B.A., Harvard, 1938; M.A., 1942; M.Ed., 1949; Ed.D., 1955.

GEORGE URCH, *Associate Professor*, B.A., Western Michigan, 1953; M.A., 1959; Ph.D., Michigan, 1967.

SILVIA VIERA, *Professor*, B.A., University of Puerto Rico, 1943; M.Ed., Columbia, 1951; Ph.D., Texas, 1960.

PETER H. WAGSCHAL, *Associate Professor*, B.A., Harvard, 1966; M.A., Stanford, 1967; Ed.D., Massachusetts, 1969.

ERNEST WASHINGTON, *Associate Professor*, B.A., Minnesota, 1960; M.A., Illinois, 1965; Ph.D., 1968.

KENNETH WASHINGTON, *Associate Professor*, B.A., Michigan State, 1961; M.A., 1967; Ph.D., 1970.

GERALD WEINSTEIN, *Professor*, B.S., Temple, 1954; M.Ed., 1959.

ROBERT WELLMAN, *Professor*, B.A., Dartmouth, 1954; M.A., Western Reserve, 1959; Ph.D., Ohio State, 1962.

DONALD W. WHITE, *Associate Professor*, B.A., Emerson, 1960; M.A., St. Louis, 1971; Ph.D., Pittsburgh, 1974.

JOHN W. WIDEMAN, *Associate Professor*, B.A., Williams, 1950; M.Ed., Harvard, 1956; Ed.D., 1970.

WILLIAM C. WOLF, JR., *Professor*, B.S. Pennsylvania State at Kutzman, 1955; M.Ed., Ohio, 1956; Ph.D., Iowa, 1959.

ROBERT L. WOODBURY, *Professor and Associate Provost*, B.A., Amherst, 1960; M.A., Yale, 1962; Ph.D., 1966.

RAYMOND WYMAN, *Professor*, B.S., Massachusetts, 1937; M.Ed., Boston, 1947; Ed.D., 1956.

## THE SCHOOL OF EDUCATION

The School of Education is committed to developing and evaluating new structures, programs, and perspectives with a goal of major reforms in education. The

## EDUCATION

school is attempting to become a powerful force for changing education to meet more effectively students' needs for living in today's world and society's needs for education to improve the quality of life for all its members.

## THE DOCTOR OF EDUCATION DEGREE PROGRAM

Typically an Ed.D. candidate spends at least three years beyond the bachelor's degree in full-time study. Within the framework of Graduate School regulations, each student plans his or her own doctoral program with the advice of and subject to the approval of a Guidance Committee. Students are expected to spend at least two consecutive semesters under direct supervision of their committees, participate in conceptual or quantitative research efforts, engage in teaching and/or some form of field experience, become familiar with contemporary problems in education, and take a comprehensive examination prior to writing a dissertation.

## CERTIFICATE OF ADVANCED GRADUATE STUDY (C.A.G.S.)

Programs leading to a Certificate of Advanced Graduate Study, individually prepared in consultation with a member of the graduate faculty, are designed for those who seek post-master's degree work in any of the approved areas, but who are not committed to the more lengthy and rigorous requirements of a doctoral program. These are not degree programs, but require a minimum of 30 credit hours beyond the master's degree (the master's degree must not be more than 10 years old). All 30 credits must be taken at the University of Massachusetts within a four-year period, and at least 15 credits must be taken in the School of Education. Of all the course work leading to the Certificate, at least 18 credits must be 700-900 courses.

## THE MASTER OF EDUCATION DEGREE PROGRAM

The Master of Education degree is offered for prospective elementary teachers, for professional improvement of elementary and secondary teachers, and for the training of educational specialists in any of the approved Areas of Concentration. Each candidate prepares a 33-credit program in consultation with a faculty adviser. A minimum of 18 credits must be graded and a minimum of 12 credits must be selected from the 700 to 900 number series of courses.

## INDIVIDUALIZED STUDY CONTRACTS

Individualized study contracts offer students the option of study and experience in areas where formal courses are not available or are too general. Such programs of reading, research, writing, etc., are described as "Independent Study" on the contract form, while experiential or field-related learning activities are labeled "Practicum".

The contractual system places maximum responsibility for initiative and work on the learner. Individualized study assumes the integrity and sincerity of the student.

## EDUCATION

### LEARNING CLUSTERS

The general academic program is characterized by a diversity of learning and teaching resources, alternative educational paths and an emphasis on active involvement in the field. The School of Education has reorganized incorporating its previous Learning Centers and programs into academic Clusters which operate as focal points for the various academic experiences and courses. A student typically will belong to the Cluster of his major adviser but may have other members of his Guidance Committee and Dissertation Committee from other Clusters, thus, cluster preference should be indicated on the Graduate School application form. The degree is not awarded through any Cluster but through the School and the Graduate School as a general education degree. Current Clusters are:

1. Humanistic Applications of Social and Behavioral Sciences in Education
2. Designs for Effective Learning
3. Division of Educational Planning and Management
4. Transdisciplinary Education, and
5. Educational Policy Studies.

A more detailed description of the academic focus of each Cluster follows.

#### HUMANISTIC APPLICATIONS OF SOCIAL AND BEHAVIORAL SCIENCES IN EDUCATION

The goal of this Cluster is to assist people in their historical and ontological vocation of becoming more fully human. The method is the application of the social and behavioral sciences to the direct education of individuals and to the transformation of the institutions that facilitate or impede human development. All members of the Cluster, both faculty and students, are attempting to answer in practice the questions, "what is full humanness?", and "how can we more effectively help people become more fully human?". However, there are productive differences among Cluster members in viewpoint, emphasis and applications of their answers to these two questions. Members draw from a wide range of theories for definitions of full humanness: humanistic psychology, theoretico-empirical descriptions of the universal stages of human development, philosophic, economic and social psychologies. Change methods vary from individual counselling and therapy to group methods for deliberate psychological education to organizational development strategies for changing larger social systems. The settings in which these methods are applied also vary widely from schools, mental hospitals and prisons to detention centers, half-way houses, community mental health centers, drug education units. This diversity of response to the cluster's basic goal is strongly encouraged as a way of maintaining a synergistic group of professionals.

The pressing need for new, more effective, more widespread assistance demands that the program have a strong innovative, applied experimental core. However, the goal is not to create a new breed of elite professional technicians, or to establish new certification procedures that artificially create a scarce service resource. On the contrary, the program is committed to the demystification of its goals and methods through national and international dissemination of the skills that help people become more fully human.

#### DESIGNS FOR EFFECTIVE LEARNING

The students, staff and faculty of the Cluster have

## GRADUATE SCHOOL

joined together to help build designs for effective learning, and share these commitments:

1. Learning through experience to create institutional means for a *reality-based education* for undergraduates, graduates, and in-service personnel.
2. Learning throughout life to create models for *open-ended education* for all involved in the education process from students and paraprofessional through administrators, parents, and community leaders.
3. Learning to change to enable schools, programs, and institutions to adapt through continuous *self-renewal* for the needs of the future.
4. Learning through diversity *combatting institutionalized and personal racism* in our own programs and in training others to do so.
5. Creating a new design for higher education to evolve an institutional model for a *new design for higher education*.

The students, staff and faculty believe that most successful ventures in changing schools have resulted from a combination of graduate and undergraduate programs with specific goals (such as designing a comprehensive model for developing human potential, implementing effective open classrooms, or improving urban schools). This Cluster is preparing pre-service and in-service personnel, teacher trainers, administrators, and researchers to act as catalysts for educational renewal. By combining field-based programs with academic disciplines, a new model for higher education has emerged which promises a growing influence over the quality of learning throughout the country.

#### DIVISION OF EDUCATIONAL PLANNING AND MANAGEMENT

The primary goal of the Division of Educational Planning and Management (DEPM) Cluster is to promote the welfare of its students with regard to learning experiences, administrative support services, financial support, sense of community and information needs. DEPM is comprised of six academically oriented sub-units. These sub-units are the Center for Curriculum and Organization (CCO), the Center for Educational Research (CER), the Clinic to Improve University Teaching (CIUT), the Center for Leadership and Administration (CLA), the Center for Occupational Education (COE), and the Academic Disciplines Program: Science and Social Studies.

To confront problems in schooling at a fundamental level, the Center for Curriculum and Organization prepares its members to focus on the teacher-learner encounter in schools. Systematic change at this level, where the concerns of the students, teachers, administrators, and parents concentrate for a minimum of 10 years in most children's lives, is the Center's priority.

The Center for Educational Research specializes in research, development, dissemination, and evaluation work within the context of professional education. Although educational research and development is the primary area of interest of CER, the faculty and students cooperatively participate in a variety of activities and services which are natural offshoots of this main function.

The Clinic to Improve University Teaching was established in 1972 to assist faculty members in improving the quality of instruction which they offer to students. Supported by a W. K. Kellogg Foundation grant, the Clinic has developed and refined a teaching

improvement process which enables individual instructors, at elementary, secondary and University levels, to work with trained Teaching Improvement Specialists to assess and improve their teaching effectiveness.

The Center for Leadership and Administration seeks to provide opportunities for each student to enhance his/her qualifications to assume important leadership positions in education. To achieve these ends, CLA relies on active involvement of each degree candidate in one or more peer advisory and support groups; close interactions between students and staff members in a variety of situations, formal and informal; and maximum responsibility and initiative for his or her own program development by each student.

The focus of the Center for Occupational Education is to instill quality and professionalism into teaching in occupational education; to thoroughly equip and train teachers in specific occupational areas, to develop leadership and administrative abilities in occupational educators; and, through related research, to develop new and relevant occupational programs.

The primary responsibility of the Academic Disciplines Program (Science and Social Studies) on the graduate level, is to offer inservice educational opportunities for practicing secondary school science and social studies teachers, which could lead to the M.Ed. degree or the C.A.G.S. The group also enrolls a small number of doctoral students preparing to become specialists in science and social studies education.

#### TRANSDISCIPLINARY EDUCATION

The Transdisciplinary Education Cluster believes that within a complex society an individual must have a basic understanding of his or her environment. This can be achieved within the school setting through the study of transdisciplinary topics such as perception, rhetoric, and movement, both as distinct entities and as elements germane to all disciplines.

The Transdisciplinary Education Cluster concentrates on the training of effective professionals in the fields of bilingual/bicultural education, communication arts (arts and humanities, reading and media), special education and transdisciplinary education/alternative schools.

Participants in Transdisciplinary Education Cluster programs often utilize the resources in the four other clusters in the School of Education.

Faculty members and graduate students of the Transdisciplinary Education Cluster are committed to addressing the urgent issues of education in the 70's and to thinking and working for the strongest possible programs of graduate training. Emphasis in all programs falls on critical inquiry, alertness to quality evaluation, shared responsibility between faculty and student members and development of solid research capabilities. Each graduate student is given maximum flexibility to plan and develop his or her course of study. Further, the faculty supports and actively encourages research into new methods and approaches which add to knowledge of Transdisciplinary Education. As the School develops a larger number of inservice components of its graduate programs, these goals develop added meaning and sense of opportunity for all.

#### EDUCATIONAL POLICY STUDIES

The primary concern of EPS is with attaining greater understanding of a wide variety of aspects of the educa-

tional process through systematic theory-based investigation and action.

EPS's major focus is "with attaining greater understanding". Thus, action projects which intend to test or apply some aspect of theory, or which seek to increase understanding of the educational process, are highly encouraged within EPS. "A wide variety of aspects of the educational process" is of concern to EPS. These "aspects" may be defined by theory of discipline (e.g., philosophy, psychology, history of education, etc.); by function (e.g., teaching, curriculum, administration, etc.); by level of instruction (e.g., early childhood, elementary, secondary, post-secondary, etc.); by educational problems (e.g., international education, racism in education, civil rights of students and teachers, etc.) or by any other category system that subdivides education.

EPS operates via "systematic, theory-based investigation and action." Experiments which test a theory, action projects which apply theory, and conceptual investigation which develop and combine theories are highly encouraged. Ultimately the concern of EPS is to bring systematic knowledge to bear on matters of public policy and particularly those aspects of public policy which effect the formulation and modification of educational policy.

#### HUMAN DEVELOPMENT

Human Development was formerly a department in the School of Home Economics and had its offices in Skinner Hall. In a move to consolidate resources, the University initiated provisional affiliation of the Human Development Department with the School of Education during the Fall 1974 semester. This affiliation has now been completed. The members of the Human Development Department have aligned themselves with the five existing clusters in the School of Education are included among the faculty listed above. In order to accommodate those students with Human Development majors, approved Human Development courses are listed separately.

#### SCHOOL OF EDUCATION CURRICULUM

The following courses form the foundations of the School of Education's curriculum program. Referred to as approved courses, they represent that portion of the School's curriculum which has gone beyond the experimental stage and which remains relatively fixed. These courses are not totally rigid, however. Although they cover basically the same subject areas each semester they are modified from semester to semester to reflect the needs of the ever changing student population and demands of professional education. Additional components of the School's curriculum program include individualized study and experimental courses which provide the capacity for individuality and numerous options that are typically not available in the approved course area.

Courses listed herein are grouped by cluster. Exceptions are the Human Development courses, which are still listed separately for the convenience of Human Development majors, and a General Listing, which includes courses that are not affiliated with any particular cluster, but which are an integral part of the School's curriculum and are shared by all of the clusters.



## EDUCATION

### HUMANISTIC APPLICATIONS OF SOCIAL AND BEHAVIORAL SCIENCES IN EDUCATION

#### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

##### 701. PRACTICUM FOR SCHOOL GUIDANCE.

Field experience under supervision. For students in final part of master's program.  
Prerequisites, Educ 577, 910, and 911. *Credit, 1-4.*

##### 706. SEMINAR IN GUIDANCE (MASTER'S SECTION).

Professional problems reviewed; ethical issues regarding confidentiality; program development to combat racism and sexism.

##### 707. SEMINAR IN GUIDANCE (DOCTORAL SECTION).

Analysis of evaluation designs and methods for measuring effectiveness of guidance services.

##### 713. HUMAN APPRAISAL AND EVALUATION.

Analysis of statistical procedures; review of achievement, aptitude, and interest tests, and their interpretation, selection, and administration; case-study procedures; ethical consideration; and problems in human assessment.  
Prerequisite, permission of instructor.

##### 730. MEASUREMENT FOR GUIDANCE.

Analysis of measurement devices in school guidance, including sociometrics, value scales, inventories, and other tests.

##### 742. PROBLEM SOLVING METHODS FOR EDUCATIONAL CONSULTANTS.

Students analyze concepts, strategies, and group behavior practices that positively or negatively affect the outcome of efforts to solve complex educational problems. *Credit, 4.*

##### 747. FAMILY COUNSELING.

Basic approaches to family counseling including communications, psychoanalytical and behavioral theories.

##### 831. LABORATORY FOR COUNSELING SKILLS.

The general nature of theory construction, levels of explanation, relationships of philosophy, psychology and sociology, various methods of facilitating human growth and development.

##### 835. SPECIAL SEMINAR IN HUMANISTIC EDUCATION.

A reading seminar exploring the philosophy, social-psychology and purposes of humanistic education. For Doctoral students who have taken Educ 522 and the Practicum in Humanistic Curriculum Development.

##### 910. SCHOOL COUNSELING THEORY.

Counseling theory and research evaluation. Methodology, philosophies, ethics, problems, and issues of school counseling.  
Prerequisites, Educ 577 and at least one hour of credit in Educ 701.

##### 911. SCHOOL COUNSELING PROCEDURES.

Instruments and techniques of guidance, such as observation, individual appraisal, and record-keeping, and school-community liaison practices.  
Prerequisites, Educ 577 and 910.

##### 912. OCCUPATIONS AND PLACEMENT IN SCHOOL GUIDANCE.

The collection and evaluation of occupational, educational, and placement information, and its use with individuals and groups of students in school guidance.  
Prerequisite, Educ 577.

## GRADUATE SCHOOL

##### 913. ADMINISTRATION OF SCHOOL GUIDANCE SERVICES.

Operative framework of guidance programs in terms of personnel, functions, physical facilities, institutional integration, finance, and data processing. To be taken near completion of master's degree.  
Prerequisite, Educ 577.

##### 915. GROUP ACTIVITIES IN COUNSELING.

A guidance study of school groups. Group dynamics, discussion techniques, group counseling, sociometric methods, and other school group activities.  
Prerequisites, Educ 577, 910, and 911.

##### 916. CLINICAL STUDIES IN SCHOOL GUIDANCE.

Intensive case studies of youth.  
Prerequisite, Educ 911 or 730.

##### 928. INTERNSHIP IN COUNSELING.

Supervised on-the job counseling experience. Work includes direct counseling, individual supervisory conferences, writing of case reports and the analysis of taped counseling sessions. For CAGS and doctoral students.

##### 929. ADJUSTMENT COUNSELING CASEWORK.

Supervised experience with children having special adjustment problems. May not be taken in addition to Educ 928.

##### 949. CAREER DEVELOPMENT.

Intensive study of theories of vocational choice, related literature and research. Analysis of world of work and impact of such factors as technology, demography, social structure, geography, automation, age, and sex on career and personal development; implications for educational institutions.

#### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

##### 520. HUMAN RELATIONS LABORATORY.

For prospective elementary teachers with several basic skills in human relations. Teacher trainees participate in exercises in attention, flexibility, and decision making in human relations.

##### 521. STRENGTH TRAINING.

A way of working with teacher, counselor, and administrator performance through simulation and videotape feedback. Stress on what kind of school the personnel project to their students. School personnel (pre- and in-service) are taught to evaluate the responses, feelings, and perceptions of students. A laboratory course with assigned readings, meeting once a week for three hours.  
Prerequisite, student teaching.

##### 522. THE EDUCATION OF THE SELF.

Educational strategies for increasing self-knowledge. A laboratory approach trains the student in those processes, concepts, and skills leading toward self-observation, pattern clarification, and the development of personal designs for response-experimentation are pursued. Journals and final papers document experiences.  
Prerequisite, permission of instructor.

##### 577. PRINCIPLES OF SCHOOL GUIDANCE.

The nature of guidance and its need in the schools with an overview of an adequate guidance service for a school system.

##### 678. PRACTICUM IN HUMANISTIC CURRICULUM DEVELOPMENT.

Models for the development of humanistic curricula. Students will employ one or more models in writing their own curricula, and in evaluating their efforts.  
Prerequisite, Educ 522.

##### 679. VALUE CLARIFICATIONS FOR TEACHERS.

To help teachers clarify their own values; how these values affect their students in and out of the classroom.

DESIGNS FOR EFFECTIVE LEARNING

ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

COURSES OPEN TO GRADUATE STUDENTS ONLY  
(For either major or minor credit)

**710. SEMINAR IN MATHEMATICS EDUCATION.**  
A survey of recent developments in elementary mathematics education and their implications for exploring mathematics in the elementary school.

**721. WORKSHOP IN LANGUAGE ARTS.**  
Students are required to design presentations in the language arts for pre-service students preparing for the open classroom. Lectures, workshops and individual conferences.

**735. ADVANCED THEORY AND PRACTICE OF TESTING I.**  
The theory of mental tests beginning with the classical test theory model and including such topics as reliability, validity, item analysis, and latent structure models.  
Prerequisite, permission of instructor.

**740. ADVANCED THEORY AND PRACTICE OF TESTING II.**  
An in-depth study of advanced topics in test theory. Includes problems in the measurement of change, latent trait theory, item-examinee sampling theory and tailored testing strategies.  
Prerequisite, Educ 735.

**757. RESEARCH, PLANNING AND DEVELOPMENT IN URBAN EDUCATION.**  
Urban development and power structures in relation to urban schools. Includes a survey of relevant literature, seminars and research or planning projects. *Credit, 3-6.*

**758. URBAN ADMINISTRATION AND SCHOOL STRUCTURES.**  
New departures in school organization and administration in urban schools. Explores decentralized school systems, MIA's, the house plan and educational parks, the development of differentiated staffs, flexible scheduling, etc.

**768. DEVELOPMENTS IN ELEMENTARY SCIENCE EDUCATION.**  
A survey of recent research in elementary science education and the resultant implications for practice in the school.  
Prerequisite, Educ 562 or 661.

**951. PRINCIPLES OF SUPERVISION.**  
Principles and problems of supervision and the exercise of educational leadership to improve instruction in the elementary curriculum and in secondary school content fields.

COURSES OPEN TO BOTH GRADUATE AND UNDER-GRADUATE STUDENTS  
(For either major or minor credit)

**505. AESTHETIC ELEMENTS IN THE TEACHING-LEARNING PROCESS.**  
To enable teachers to increase their creativity and to use the arts in the classroom through improvisation workshops, discussions, readings and curriculum projects.

**557. INTRODUCTION TO URBAN EDUCATION.**  
Discussion groups survey urban and suburban schools, discuss the process of learning in urban classrooms, study the effects of the present curriculum, and survey various innovative techniques as they apply to urban schools.

**559. PRINCIPLES AND METHODS OF TEACHING ELEMENTARY SOCIAL STUDIES.**  
Students evaluate various state, commercial, and project social-studies curricula in terms of instructional strategies. Practical experience in creating a social studies unit.

**560. THE ELEMENTARY SCHOOL CURRICULUM**  
The content and methodology of the elementary school curriculum. Emphasis on the unit method and activity programs.  
Prerequisites, electives in Foundations of Education and Child Psychology, Educational Psychology, or Human Development.

**561. PRINCIPLES AND METHODS OF TEACHING READING AND LANGUAGE ARTS IN THE ELEMENTARY SCHOOLS**  
Approaches to the teaching of reading and language arts in the elementary schools. Innovations in methods and materials demonstrated and discussed.

**562. PRINCIPLES AND METHODS OF TEACHING ELEMENTARY SCIENCE.**  
Provides aid in preparing pre-service students for teaching science in elementary schools. Methods, materials, and latest curriculum work.

**563. PRINCIPLES AND METHODS OF TEACHING ELEMENTARY MATHEMATICS.**  
An introduction to the structure of mathematics, and to the role, methods, material, and curricular aspects of mathematics education in the school.

**568. CURRICULUM DEVELOPMENT IN URBAN EDUCATION.**  
Students develop new and innovative curricula for urban schools and investigate what kinds of curriculum development are relevant to inner-city environments. A post-urban internship consisting of lectures, seminars, and field experience.

**572. TEACHING READING TO SPECIAL POPULATIONS K-12**  
Approaches to the teaching of reading to such special populations as the disadvantaged, the gifted, and the emotionally disturbed, with stress on the individualized and experience approaches. One group studied intensively.

**617. INTRODUCTION TO COMPUTER USE IN TEACHING.**  
Introduces novices to uses of the computer in the teaching/learning process.

**618. INSTRUCTIONAL APPLICATIONS OF COMPUTERS.**  
Each student proposes, designs, develops, implements and documents a unit of computer-assisted instructional material.

**630. ECONOMICS OF EDUCATION.**  
An introduction to economists' approaches to education as an investment in human capital. Review of the literature and discussion of issues raised.

**632. PRINCIPLES OF EDUCATIONAL AND PSYCHOLOGICAL TESTING**  
Basic principles of measurement. Topics include descriptive statistics, reliability, validity, principles of test-construction, item analysis and a review of standardized tests.

**661. SCIENCE EDUCATION IN THE ELEMENTARY SCHOOLS.**  
For teachers or other interested persons who wish to bring their knowledge of methods, materials, and curriculum up to date. Laboratory approach.

**671. URBAN COMMUNITY RELATIONS.**  
The interrelationship of inner-city communities and established power within the school system, community control, participation, and decision-making in education and development of alternatives in power relationships. Lecture, discussion and field experience.

DIVISION OF EDUCATIONAL PLANNING AND MANAGEMENT

ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

## EDUCATION

### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

722. **WORKSHOP IN EDUCATIONAL ADMINISTRATION (PRINCIPALS).**
723. **WORKSHOP IN EDUCATIONAL ADMINISTRATION (ADMINISTRATORS).**
725. **EXTERNSHIP IN BUSINESS AND INDUSTRY.**  
Supervised field experience in industry, business, research organizations, or public agencies relevant to the student's area of specialization. Planned individually by student, cooperating business and vocational-technical education staff prior to enrollment. *Credit, 1-6.*
731. **INTRODUCTION TO FACTOR ANALYSIS.**  
An introductory treatment of the linear factor model consideration of the basic problems of factor analysis and a discussion of various factor-analytic solutions. Problems of design and interpretation discussed.  
Prerequisite, permission of instructor.
736. **SEMINAR IN CURRICULUM DEVELOPMENT IN VOC. TECH. EDUCATION.**  
Curriculum development approached from the standpoint of problem areas and embodying current research and response to social or technical changes.
745. **INQUIRY INTO AMERICAN SCHOOLING.**  
Contemporary educational practices. Emphasis on promising developments in curriculum, staffing, and organization of public schools, past and future innovations.
752. **INTRODUCTION TO THE USES OF COMPUTERS IN EDUCATION.**  
Many areas of application of computer-related technology to schools, including instruction, research, administration, the systems approach and general societal impact of the computer.
765. **ORGANIZATION FOR CURRICULUM DEVELOPMENT: BASIC PRINCIPLES IN CURRICULUM AND INSTRUCTION.**  
The procedures and criteria for curriculum development. Determining goals, creating and organizing learning opportunities, and evaluating the effectiveness of curricula, considered in a small group setting.
766. **CURRICULUM DEVELOPMENT: THEORY AND RESEARCH.**  
The needs of children and society; modern programs; procedures for developing curricula and improving present offering in a school. Includes clinical involvement in curriculum development in schools cooperating with the Center for Study of Educational Innovations.
769. **EVALUATION OF CURRICULUM PROGRAMS.**  
The role of evaluation in curriculum development and the development of evaluative instruments. The nature of the educational environment of schools and the need for determining what makes a compelling curricular program.  
Prerequisites, Educ 765 and 766.
811. **RECENT DEVELOPMENTS IN SECONDARY SCIENCE.**  
The scope and sequence of the science curriculum; the rationale, content, and implications for different student populations of selected curricula.  
Prerequisite, teaching experience.
813. **NEW DEVELOPMENTS IN SECONDARY SCHOOL SOCIAL STUDIES.**  
A comparative study and evaluation of recent programs and practices in secondary school social studies.
820. **RESEARCH PRACTICUM IN EDUCATION.**  
Educational problems examined in varied field settings. Alternative solutions contemplated in the context of schools,

## GRADUATE SCHOOL

state agencies, and federally-sponsored projects. Consultative arrangements made for students; discussions and field work.

833. **EDUCATIONAL KNOWLEDGE DIFFUSION AND UTILIZATION.**  
Efforts to diffuse and utilize research in agriculture, medicine, the military, social sciences, and the world of commerce.
838. **SEMINAR IN SCIENCE EDUCATION.**  
The current literature and research in science education of researchable problems and research strategies which may be applicable.
846. **WORKSHOP IN SCIENCE EDUCATION.**  
Selected problems in curriculum and instruction in science. *Credit, 3-6.*
849. **CURRENT CONCEPTS, TRENDS, AND PRACTICES IN VOCATIONAL-TECHNICAL EDUCATION.**  
Concepts resulting from a critical evaluation of the research and legislation involved in the development of vocational and technical education programs.
950. **FUNDAMENTALS OF EDUCATIONAL ADMINISTRATION.**  
Introduction to general school administration, the relation of public education to the cultural pattern, and organization and practices in school administration.
952. **ADMINISTERING ELEMENTARY SCHOOLS.**  
The principal's responsibilities, organization of the school office, scheduling, use of school facilities, curriculum organization, staff relationships, and the place of the school in the community.  
Prerequisite, teaching experience.
953. **ADMINISTERING SECONDARY SCHOOLS.**  
Housing, finance, scheduling, the library, guidance, cafeteria, public relations, etc.  
Prerequisite, teaching experience.
954. **PUBLIC SCHOOL FINANCE.**  
The economics of public education, sources of school revenue, taxation, and federal, state and local plans of school fiscal support.  
Prerequisite, Educ 950.
955. **COMMUNITY RELATIONS FOR SCHOOL PERSONNEL.**  
The development of good public-relations policies and techniques for assisting lay people in interpreting school activities, policies, and objectives.  
Prerequisite, permission of instructor.
956. **PRINCIPLES OF SCHOOL LAW.**  
Review of the legal relations of school personnel in school and community. A series of selected cases.
957. **LEGAL BASIS OF SCHOOL ADMINISTRATION.**  
The legal basis of school operation, cases in school law, the role of the attorney general and school solicitor in school law interpretation, and school operation in relation to federal, state, and local environment.  
Prerequisite, Educ 950.
958. **SCHOOL PERSONNEL ADMINISTRATION.**  
The leadership role in staff performance and duties, the planning and promotion of continuous programs of in-service training, and personnel recruitment and development.  
Prerequisite, Educ 950.
959. **SCHOOL BUSINESS ADMINISTRATION.**  
The business aspects of school administration as related to the attainment of educational objectives. The nature of the problems involved and the skills needed in directing school business affairs.  
Prerequisite, Educ 950.



## UNIVERSITY OF MASSACHUSETTS

## EDUCATION

### 960. SCHOOL PLANT PLANNING.

A comprehensive study of school plant needs, site selection, bonding, building planning, and standards, architectural service, and furniture and equipment selection practices.  
Prerequisite, Educ 950.

### 961. CASE STUDIES IN EDUCATIONAL ADMINISTRATION.

A series of situations involving the role of the school administrator in a democracy.  
Prerequisites, Educ 950 and 958.

### 962. EDUCATIONAL PLANNING AND EVALUATION.

Participation in a school survey to give advanced graduate students practical field experience in inspection evaluation and recommendations for future action in the educational operation.  
Prerequisites, Educ 950, 959, 960, and permission of instructor. Taught in two consecutive semesters. *Credit, 6.*

### 963. INTERNSHIP IN EDUCATIONAL ADMINISTRATION.

For advanced graduate students in educational administration. Placement on assignment in actual school administration positions on the basis of cooperative school system-university selection, assignment, and supervision.  
Prerequisites, 18 semester hours in educational administration and permission of instructor. *Credit, 1-12.*

### 964. ADMINISTRATION OF ADULT EDUCATION.

Role of the public schools in continuing community service and planning and directing programs in adult education; adult needs in preparation for job procurement, retraining, job advancement, and community service.  
Prerequisite, Educ 950.

### 965. THEORY AND RESEARCH IN EDUCATIONAL LEADERSHIP.

The historical development of administrative theory. Emphasis on its contribution to research and development in educational administration.  
Prerequisite, Educ 950.

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

#### 516. EVALUATION MODELS.

Seminar utilizing the writings of Guba, Stufflebeam, Stake, Pace, Serevin, Bloom, and Hammond. Emphasis on philosophies of evaluation, variables employed in the various models, and the generation of new evaluation designs.

#### 517. LEARNING SYSTEMS DEVELOPMENT.

Teaches educational specialists, administrators, and classroom teachers procedures for developing instruction that meets student needs, including techniques of accountability, individualizing instruction, using instructional objectives, and evaluation techniques.

#### 518. RESEARCH METHODS IN EDUCATION.

An interdisciplinary course on research methods and scholarship in psychological, sociological, economic, political, historical, and philosophical studies of education.  
Prerequisites, study in a discipline and permission of instructor.

#### 531. ISSUES IN FREEDOM AND RESTRAINT IN ACADEMIC POLICY.

The sociological, philosophical, economic, and anthropological considerations found in freedom and restraint conflict, via readings in periodicals and discussions.

#### 532. STUDENT REVOLUTION AND CURRICULUM CHANGE.

Examination of sources, mechanisms, and consequences of social and cultural change; analysis of theories of change and of important theoretical studies in that area. Limited enrollment.

### 533. EDUCATIONAL LAW.

An introduction to the legal aspects of public education including rights and liabilities of school boards, teachers, and pupils; special attention to recent legal interpretations.

### 584. ORGANIZATION AND ADMINISTRATION OF A DISTRIBUTIVE EDUCATION PROGRAM.

Activities necessary to initiate, maintain, and improve a Distributive Education Program. Focus on organization and administration at the secondary level.

### 586. ORGANIZATION AND ADMINISTRATION OF A COOPERATIVE EDUCATION PROGRAM.

Organization and administration of the Cooperative Education Program at the secondary level. Examines those activities necessary to initiate, maintain and improve a Cooperative Education

### 587. VOCATIONAL ADULT EDUCATION.

Organization and administration of vocational adult classes; the interrelationships between secondary and adult education.

### 588. DIRECTED OCCUPATIONAL EXPERIENCES (INTERNSHIP PROGRAM).

Eight weeks of directed occupational experience in each of the three major fields of distribution (retail, wholesale, service) planned individually by student, cooperating business, and vocational-technical education staff prior to enrolling. *Credit, 2-4*

### 589. METHODS AND MATERIALS FOR DISTRIBUTIVE EDUCATION.

Information on securing, evaluating, organizing, and presenting instructional materials and experiences. Designed for prospective distributive-education personnel. *Credit, 2*

### 610. PRINCIPLES AND METHODS IN TEACHING SOCIAL STUDIES IN THE SECONDARY SCHOOLS.

A critical examination of various possible goals and strategies for secondary-school social-studies instruction, to help the prospective teacher develop a defensible rationale for his teaching. Designed as a pre-service offering.

### 612. PRINCIPLES AND METHODS IN TEACHING SECONDARY SCIENCE.

The nature and content of science, learning strategies, and values of self and society, to help the pre-service science teacher formulate his own philosophy and rationale for education in science.

### 624. DESIGN AND MANAGEMENT OF SCHOOL INFORMATION SYSTEMS.

Systems analysis, problem definition, hardware selection, site preparation, systems design, staff selection, information collection and display, programming and procedure documentation standards, and user-training for various types of information systems. Concurrent internship in an appropriate school information center expected.  
Prerequisite, a knowledge of computer programming.

### 633. INTRODUCTION TO RESEARCH FOR NON-RESEARCH MAJORS.

Purposes for research; different kinds of research (i.e., historical, survey, and experimental models); specific research methodology (drawn from statistics, experimental design, and measurement and evaluation).

### 655 (I), 656 (II). INTRODUCTION TO STATISTICS AND COMPUTER ANALYSIS.

Elementary descriptive statistics, control of the computer terminal inferential statistics, and some programming concepts with a computer language (FORTRAN) for unique solutions of problems. First semester (or permission of instructor) prerequisite for second semester.

### 658 (I), 659 (II). INTRODUCTION TO SCHOOL ADMINISTRATION.

To introduce each of the many disciplines on which an

## EDUCATION

administrator calls. Members of the faculty of the University and the Five Colleges lecture on their own disciplines.

### 672. PRINCIPLES AND PRACTICES IN VOCATIONAL EDUCATION.

Emphasis on secondary and post-secondary programs and the relationship of vocational education to the total educational program.

### 673. APPRENTICE TEACHING IN AGRICULTURE.

A full year (in absentia) teaching agriculture, horticulture, and related subjects under a supervising teacher in a selected school. *Credit, 6.*

### 675. METHODOLOGY AND MATERIALS FOR TEACHING IN OCCUPATIONAL EDUCATION.

A seminar approach to special methodology in occupational education. Content based on experiences of students in teaching. Laboratory section in microteaching. *Credit, 1-4.*

### 676. PREPROFESSIONAL LABORATORY EXPERIENCE IN OCCUPATIONAL EDUCATION.

Participatory experience in teaching in occupational education programs, including directed observation of instructional activities, teaching individuals and conducting occupational placement, and/or off-farm instruction. *Credit, 1-4.*

## TRANSDISCIPLINARY EDUCATION

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

##### 709. SEMINAR IN READING.

Content varies each semester. Topics may include psycholinguistics and reading, miscue analysis, current issues, role of the reading consultant.

##### 714. SEMINAR IN ENGLISH EDUCATION.

##### 716. WORKSHOP IN REMEDIAL READING.

##### 727. PHOTOGRAPHY IN EDUCATION.

Theory and practice of taking and processing photographs for use in educational activities.

##### 728. AUDIOVISUAL TECHNOLOGY.

Applications of acoustics, electricity, magnetism, mechanics, and optics to audio-visual equipment and techniques. Prerequisite, Educ 667.

##### 737. EDUCATIONAL MEDIA THEORY.

The research and theoretical aspects of media in education systems; special reference to philosophies, learning systems and communication models which relate to the teaching-learning situation.

##### 738. ADVANCED MEDIA PRODUCTION.

Professionals preparation in the area of education media and technology.

##### 739. VISUAL COMMUNICATIONS AND LITERACY.

The elements of visual literacy and of programs of visual education.

##### 780. RESEARCH IN READING.

Discussion and review of relevant research and development activities in reading, past, present, and future, including an analysis of the research-to-implementation process and an investigation into possible breakthroughs in reading instruction. Prerequisite, permission of instructor.

##### 782. CHILDREN'S LITERATURE.

Lectures, demonstrations, discussions, practicum and readings surveying the field. Investigates various content areas

## GRADUATE SCHOOL

(such as comparative folklore, poetry, and non-fiction), approaches for classroom use, contemporary problems, and the needs of specific populations.

### 783. DIAGNOSIS OF READING DIFFICULTIES.

Develops a background of information in the diagnosis and treatment of reading difficulties. Theory and interpretation of diagnostic procedures. Prerequisite, Educ 561.

### 812. RECENT DEVELOPMENTS IN SECONDARY ENGLISH.

A critical evaluation of the current literature, research, year-books, and experiments in the curriculum and teaching of English. Prerequisite, Educ 609 and teaching experience.

### 814. RECENT DEVELOPMENTS IN SECONDARY MATHEMATICS.

A critical evaluation of the current literature, research, and studies in the curriculum and teaching of secondary school mathematics. Prerequisites, Educ 611 and teaching experience.

### 815. SECONDARY SCHOOL CURRICULUM.

The factors influencing the secondary school curriculum, the organization of the curriculum, and the goals of the secondary school, and current developments and elements desirable in the curriculum of typical secondary schools. Prerequisite, teaching experience or permission of instructor.

### 850. AUTO-INSTRUCTIONAL DEVICES AND PROGRAMMED LEARNING.

Theory and practice of programmed learning for typical school subjects. Each student sets up objectives and constructs a program for a unit of work. Implications for future use in education are considered. Prerequisite, Educ 667.

### 852. ADMINISTRATION OF AUDIOVISUAL SERVICES.

To prepare audiovisual coordinators, directors, and supervisors in the operation of an audiovisual service: teacher-training, selection of materials and equipment, storage, cataloging, distribution, maintenance, and financial support. Prerequisites, Educ 667 and teaching experience.

### 854. NEWER MEDIA IN EDUCATION.

To acquaint administrators, supervisors, and experienced classroom teachers with the characteristics, applications, and implications of the newer media in education such as language laboratories, motion pictures, closed circuit television, and teaching machines. Prerequisite, Educ 667 or permission of instructor.

#### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit).

### 527. CURRICULUM DEVELOPMENTS IN MUSIC AND SOUND IN EDUCATION.

A survey of methods, materials, techniques, and problems related to the innovative use of music and sound in the classroom as an aesthetic medium for enhancing learning of all kinds. Development of experimental innovations and their applications.

### 530. CURRICULUM INNOVATIONS IN MOVEMENT AND DANCE IN EDUCATION.

A survey of methods, materials, techniques, problems, and relevant research literature related to the use of movement and dance in the classroom as an aesthetic medium for enhancing learning of all kinds. Experimental application of innovations developed in the course.

### 535. EDUCATIONAL MEDIA, TECHNOLOGY AND SYSTEMS.

The characteristics, capabilities, applications and implications of a variety of media to a variety of educational strategies.

## UNIVERSITY OF MASSACHUSETTS

## EDUCATION

**536. AUDIOVISUAL INFORMATION TRANSMISSION.**  
Available knowledge and technology useful in the design of audiovisual materials. A search for principles useful in planning materials to aid in cognitive and effective experiences in educational contexts.

**537. MEDIA PRODUCTION SURVEY.**  
Students prepare slides, graphics, recordings, and still and motion pictures for use in an educational program. Designed for teachers, trainees, and specialists.

**538. PRE-PRODUCTION CREATIVITY OF EDUCATIONAL FILMS.**  
How to visualize ideas, concepts and curricula, utilizing all video and cinemagraphic techniques of live action, animation, cuts, dissolves, freeze frames, slow motion, etc. to communicate them interestingly and effectively.

**541. EDUCATIONAL FILM PRODUCTION.**  
Theoretical data and project applications: students produce educational messages in a motion picture film format through the use of portable video tape. Two 2-hour lectures per week.

**609. PRINCIPLES AND METHODS IN TEACHING SECONDARY ENGLISH.**  
An analysis of purposes, problems, issues, methods, and materials in the teaching of English at the secondary level. Discussion, lectures, case studies, projects. Does not satisfy core requirements. Prerequisite for student teaching in English.

*Credit, 4.*

**611. PRINCIPLES AND METHODS IN TEACHING SECONDARY MATH.**  
The nature and content of mathematics, learning strategies, and values of self and society; to help the pre-service mathematics teacher formulate his own philosophy and rationale for education in mathematics.

**657. TEACHING THE HANDICAPPED THROUGH MEDIA.**  
Professional preparation in educational media and technology. Partially fulfills requirements for the educational media and technology program.

**660. EDUCATIONAL BROADCASTING.**  
A history of educational broadcasting. The current status, development, and availability of radio and television programming for educational purposes. Evaluation of radio and television in accordance with instructional objectives.

**662. EDUCATIONAL TV WORKSHOP.**  
For teachers and teacher interns. The hardware of television; experimental use of television in solving educational problems.

**667. PREPARATION AND USE OF AUDIO VISUAL MATERIALS.**  
Machines, materials, and techniques for teaching groups of students.

### EDUCATIONAL POLICY STUDIES

**ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED**

**COURSES OPEN TO GRADUATE STUDENTS ONLY**  
(For either major or minor credit)

**712. ENGLISH FOR THE DISADVANTAGED.**  
Special problems involved in teaching English in secondary schools in which students come largely from culturally and economically disadvantaged backgrounds.

**724. SEMINAR IN INTERNATIONAL EDUCATION (For Doctoral Majors).**  
An integrating core experience for doctoral students in international education. Current issues and areas of competency needed in the field.

**729. RESEARCH METHODOLOGY IN INTERNATIONAL EDUCATION.**  
An introduction to research methods; students enabled to design and carry out field studies in international education. Techniques used in the various social sciences and examples of their application to problems in international education. Survey methods, attitude and value analysis, interviewing and participant-observation techniques, and research design. Models of design and techniques presented for critique. Each student sets up a research design and method outline for a specific project.

**743. HISTORY OF EUROPEAN EDUCATION.**  
Educational movements and institutions traced from early Greece to the present in Europe, in an attempt to understand modern problems better.

**744. HISTORY OF HIGHER EDUCATION IN AMERICA.**  
An inquiry into the role of the college and university in American society in the past as well as the present. Special attention to the meaning of a college education at various periods in American life.

**748. THE TWO-YEAR COLLEGIATE INSTITUTION IN AMERICAN EDUCATION.**  
The evolution of variant forms of two-year degree-granting institutions with attention to related philosophical and social issues. *Credit, 2.*

**750. THE UNIVERSITY: AN ORGANIZATIONAL ANALYSIS.**  
The effects of institutional organization in higher education on human behavior.

**751. INDIVIDUAL ALIENATION AND CONTEMPORARY HIGHER EDUCATION.**  
An analysis based on interdisciplinary readings on student alienation in contemporary institutions of higher education.

**816. TECHNOLOGY AND EDUCATIONAL DEVELOPMENT.**  
Modern technology and educational innovations and their adaptations to problems of developing countries. Students expected to design a project for implementing given innovations in the context of a particular country.

**817. TECHNIQUES OF EDUCATIONAL PLANNING FOR DEVELOPING COUNTRIES.**  
For advanced doctoral majors in educational development. Basic techniques of educational planning as currently used in Europe and developing countries. Students carry out a planning exercise for a given school system.

**830. EDUCATION AND NATION BUILDING.**  
The educational problems facing developing nations as they endeavor to use the schools as an ameliorative agent. Economic factors and political considerations influencing educational planning in divergent cultures; the allocation of educational resources and the confrontation between old and new cultural values.

**836. SEMINAR IN EDUCATIONAL SOCIOLOGY AND EDUCATIONAL ANTHROPOLOGY.**  
Seminar in selected topics in educational sociology and educational anthropology.

**837. SEMINAR IN EDUCATIONAL HISTORY.**  
Seminar in selected periods or topics of educational history.

**870. SPECIAL PROBLEMS IN INTERNATIONAL EDUCATION.**  
Independent work in international education. *Credit, 1-6.*



## EDUCATION

### 880. CURRENT ISSUES IN EDUCATION.

In-depth exploration of historical antecedents, present conditions, and future alternatives. Fulfills the "Foundations" requirement for students seeking teacher certification.

### 881. COMPARATIVE EDUCATION.

The processes and problems of educational development in selected areas throughout the world. The interrelationship between education and culture explored in a multicultural context. While historical antecedents are recognized, major emphasis is on the cultural forces responsible for contemporary educational practices. Fulfills "Foundations" requirement for students seeking teacher certification.

### 884. EDUCATIONAL SOCIOLOGY.

The American public schools examined as one of many social institutions in the American culture. Emphasis on population, pressure groups, and the social structure of the schools within the community. Optional field experience. Fulfills "Foundations" requirement for students seeking teacher certification.

### 887. HISTORY OF AMERICAN EDUCATION.

A survey of the development of education in the United States. The uses which society has made of American schools.

### 890. ANCIENT AND MEDIEVAL EDUCATIONAL THOUGHT.

Representative educational thinkers during the ancient and medieval periods.

### 891. MODERN EDUCATIONAL THOUGHT.

Representative educational thinkers of this era.

### 914. STUDENT PERSONNEL SERVICES IN HIGHER EDUCATION.

Origin, growth, and operation of student personnel services in American colleges and universities. Specific personnel services such as selection and admission of students, orientation to college life; student financial aid, student activities, and discipline. Prerequisite, Educ 577.

### 918. SEMINAR IN RESEARCH ADVANCED METHODOLOGY FOR INTERNATIONAL EDUCATION.

An advanced seminar in research methods for doctoral candidates about to begin field work. Discussion and analysis of dissertation proposals. Normally taken by second and third year doctoral students in international education.

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

### 525. EDUCATION IN AFRICA.

Major trends in education on the developing African continent. Emphasis on the changes since independence. The impact of cross-cultural forces at work in education.

### 526. CURRICULUM DEVELOPMENT IN INTERNATIONAL EDUCATION.

The resources and concepts of curriculum development in international education. Students expected to develop units that can be taught in elementary or secondary schools.

### 528. LABORATORY IN CROSS-CULTURAL STUDIES.

To develop a sensitivity to cultural differences by examining the elements of cross-cultural communications in an educational context. Primarily for teachers and those working in other educational fields. Experientially based (employing field work, role-playing, and gaming), and balanced by analytical readings, discussions, and independent study. Fulfills "foundations" requirement for students seeking Teacher Certification.

### 529. INTERNATIONAL EDUCATION.

An introduction to certain portions of international education. The issues surrounding education as a tool of develop-

## GRADUATE SCHOOL

ment, education in a cross-cultural context, and education through international exchange of persons and ideas. Substantial foreign-student participation. Readings, class discussions, learning games, and individual study projects. Fulfills "Foundations" requirement for students seeking Teacher Certification.

### 542. CONTEMPORARY EDUCATIONAL PHILOSOPHIES.

Critical examination of selected contemporary philosophies of education. Special attention to social implications and to relevance to educational practice. Fulfills the "Foundations" requirement for students seeking Teacher Certification.

### 543. DESIGNING AND CONDUCTING ACTIVITIES TO HELP ADOLESCENTS DEVELOP AND LIVE BY THEIR VALUES.

How to design and conduct classroom activities that when carefully sequenced can help adolescents develop and live by their values.

### 545. METHODS OF STIMULATING THE EXPLORATION OF VALUES.

Various ways of utilizing group dynamics methodology to stimulate value exploration of psychological issues and social issues confronting contemporary youth, such as drugs, race, and sex.

### 550. CONCEPTIONS OF LIBERAL EDUCATION.

Traditional and modern conceptions of liberal education analyzed with regard to their relevance to contemporary societies and education.

### 551. FOUNDATIONS OF EDUCATION.

Selected problems and issues in modern education studied through the discipline of educational sociology, educational history, educational philosophy, comparative education, or social psychology. Independent study or field experience optional. Possible foci are educational aims, societal expectations of the schools, church-state relations, professionalism, academic freedom, curriculum and methodological emphasis, urban education, and educational innovation. Fulfills "Foundations" requirement for students seeking Teacher Certification.

### 554. EDUCATIONAL ANTHROPOLOGY.

Relevant concept from cultural anthropology (such as change, human behavior and interaction, and cultural determinants within American culture) applied to education. The culture of the schools and the role of this subculture in the culture as a whole.

### 565. EDUCATING THE DISADVANTAGED CHILD.

The issues and problems in educating disadvantaged children. Emphasis on urban elementary education; rural education problems also addressed.

### 590. OBSERVATIONAL TECHNIQUES IN EARLY CHILDHOOD EDUCATION.

Observation of early childhood educational programs of various kinds serving disadvantaged as well as middle-class children. Four laboratory hours per week during the first four weeks of the first semester. Credit, 1.

### 591. EARLY CHILDHOOD EDUCATION MOVEMENT.

Contemporary purposes, programs, and problems of early childhood education, from an historical and philosophical perspective. A one-semester graduate seminar. Meets state requirements for Teacher Certification.

### 592. SEMINAR IN CURRICULUM DEVELOPMENT FOR EARLY CHILDHOOD EDUCATION.

Curriculum components for children in early-education programs designed to follow each field-teaching experience. Limited to students specializing in early childhood education.

## UNIVERSITY OF MASSACHUSETTS

## EDUCATION

### 593. (1), 594. (11). LABORATORY COURSE ON USING HUMAN DEVELOPMENT KNOWLEDGE IN EDUCATION

A year-long laboratory course paralleling both field-teaching experiences for students concentrating on early childhood education. Factors such as sex, environment, social status, and culture examined in terms of their relation to growth rates and patterns. Data taken from the community in which each teaching experience takes place.

### 595. ADVANCED SEMINAR IN LANGUAGE DEVELOPMENT IN EARLY CHILDHOOD EDUCATION.

The relationship between language and thought. Emphasis on contemporary language development programs in early childhood education. Includes an analysis of linguistics.

### 598. THE INDIVIDUAL AND THE ORGANIZATION OF HIGHER EDUCATION.

Analysis of the effects of institutional and organizational structure and values on individual development.

### 599. ALTERNATIVE STRUCTURES IN HIGHER EDUCATION.

Review and analysis of organizational structures of institutions of higher education; design of alternative models for governance and learning. *Credit, 4*

### 619. EDUCATION AND PUBLIC POLICY.

Selected issues and problems concerning the interaction between education and politics at the local, state, and national levels.

### 663. EDUCATION IN ASIA.

The relationship between education and society in the major nations of the Far East. The process of change in educational thought and institutions; the conflict between tradition and contemporary forces.

### 665. EDUCATION IN LATIN AMERICA.

The developmental history of the educational structures and systems of Latin America. Emphasis on the effectiveness of the various educational models. Analysis based on related case studies.

### 666. EDUCATION AND DEVELOPMENT

The relationship between the development of national and regional areas and education. Systems analysis introduced; areas for potential research projects identified.

### 668. EDUCATIONAL PATTERNS AROUND THE WORLD.

The processes and problems of educational development in selected areas throughout the world and the interrelationship between education and culture. Emphasis on cultural forces of education.

### 669. PRACTICUM IN INTERNATIONAL EDUCATION.

Supervised practical experience in various areas of international education. *Credit, 1-6.*

### 687. SPECIAL PROBLEMS IN INTERNATIONAL EDUCATION.

Independent work on special problems or in certain areas of International Education. *Credit, 1-6.*

### Human Development (Hum Dev)

### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

### 700. SPECIAL PROBLEMS IN HUMAN DEVELOPMENT

Individual study of a selected problem for qualified students. By arrangement with members of the department. *Credit, 3-6.*

### 710. SEMINAR.

Readings, reports and discussions on the current literature in the area of Human Development. *Credit, 1-3.*

### 800. MASTER'S THESIS.

Individual research.

*Credit, 6-10.*

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

(For either major or minor credit)

### 570. CHILD DEVELOPMENT.

The child from the developmental point of view. Emphasis on interaction of heredity and environment on development. Prerequisites, Soc 101, Psych 101, or permission of instructor

### 572. DIRECTED LABORATORY SCHOOL OBSERVATION

Directed experience in observation techniques with laboratory school children.

Prerequisite, HUM DEV 570 or equivalent.

### 600. HUMAN DEVELOPMENT IN INFANCY.

Development of the infant from birth to age two.

Prerequisite, HUM DEV 570 or permission of instructor.

### 610. LANGUAGE AND COGNITIVE DEVELOPMENT

Language and cognition from the developmental point of view. Emphasis on the relationship between language and thought and changes in that relationship in the course of cognitive growth.

Prerequisite, HUM DEV 570 or equivalent.

### 650. RESEARCH METHODS IN HUMAN DEVELOPMENT.

Methods and techniques for studying developmental processes at various stages of the life span, from infancy to old age. Prerequisite, HUM DEV 570 or equivalent, or concurrently with HUM DEV 570.

### 660. THEORIES OF HUMAN DEVELOPMENT.

The major theories of human development. Emphasis on psychological theories and concepts. The relevance and relationship of biological, social and anthropological concepts.

Prerequisite, HUM DEV 570 or equivalent.

### 670. HUMAN DEVELOPMENT IN ADOLESCENCE AND YOUNG ADULTHOOD

Human development during the second decade of life. Emphasis on biological, psychological, and sociological aspects. Theories of adolescent development.

Prerequisite, HUM DEV 570 or equivalent, or permission of instructor. Human Development majors only.

### 675. THE GHETTO FAMILY.

Family relationships and styles of life of lower socio-economic status families. Emphasizes social and psychological factors that influence interpersonal relationships and life strategies among the poor.

Prerequisite, HD 270/570 or permission of instructor.

### 676. ALTERNATE FAMILY STYLES.

Comparative evaluation of the traditional nuclear monogamous family and alternative family structures developed in this society.

### 680. HUMAN DEVELOPMENT IN ADULTHOOD.

Human development from young adulthood through old age. A social psychological perspective of change across the adult life span.

Prerequisite, HUM DEV 270 or equivalent, or permission of instructor.

### 681. LABORATORY SCHOOL MANAGEMENT.

Principles and methods of early childhood education. Includes teaching methods and curriculum planning for two- to five-year-old children.

Prerequisites, HUM DEV 570 or equivalent.

### 682. PHILOSOPHY AND THEORIES OF EARLY CHILDHOOD EDUCATION.

Philosophy, theories, and history of early childhood education. Field trips.

Prerequisite, HUM DEV 681 or permission of instructor.

## ELECTRICAL AND COMPUTER ENGINEERING

### 683. STUDENT TEACHING IN THE LABORATORY SCHOOL.

Students plan, direct, and teach curriculum in the laboratory school under staff supervision.  
Prerequisite, HUM DEV 570 or permission of instructor.

684. INTERNSHIP IN A CHILD-SERVING PROFESSION.  
Teaching or work with normal or exceptional children, Head-start children, or the emotionally disturbed.  
Prerequisite, HUM DEV 570 or permission of instructor.

### GENERAL LISTINGS

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

700. SPECIAL PROBLEMS IN EDUCATION.  
A critical study of some problem in the educational field.  
*Credit, 1-4.*

702. INDEPENDENT STUDY. *Credit, 1-12.*

705. SEMINAR IN EDUCATION.  
An intensive analytical study of some phase of education.  
*Credit, 3-12.*

715. WORKSHOP IN EDUCATION.  
Group study of practical problems in curriculum, instruction, and administration for school personnel in service.  
*Credit, 2-6.*

900. DOCTORAL DISSERTATION. *Credit, 18.*

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

553. EDUCATIONAL TESTS AND MEASUREMENTS.  
The most serviceable tests for measuring achievement. Test construction, administration, scoring, and interpretation of results studied and applied to the classroom.

582. PRE-PRACTICUM IN EDUCATION.  
Practicum experience in teaching prior to Student Teaching. Includes such experiences as microteaching, "strength training," and tutoring. Required for students seeking Teacher Certification.

585. STUDENT TEACHING.  
A 16-week field experience under the tutelage of a cooperating teacher and University supervisor in an approved school system. No graduate credit given for students majoring in Education except for M.A.T. candidates.  
Prerequisite, Educ 582. *Credit, 3-12.*

616. AMERICAN SECONDARY EDUCATION.  
Learning materials and activities and their organization in various teaching fields.  
Prerequisite, an elective in Foundations of Education and Psych 793. *Credit, 2.*

685. PRACTICUM IN EDUCATION.  
Each semester a group of experimental courses will be offered dealing with practical experiences in some phases of education. *Credit, 1-6.*

686. SPECIAL PROBLEMS IN EDUCATION.  
A group of experimental courses offered each semester.

## Electrical and Computer Engineering

### GRADUATE FACULTY

LEWIS E. FRANKS, *Professor and Chairman of the Department of Electrical and Computer Engineering,*

## GRADUATE SCHOOL

B.S., Oregon State, 1952; M.S., Stanford, 1953; Ph.D., 1957.

JACK K. WOLF, *Professor and Graduate Program Director*, B.S., University of Pennsylvania, 1956; M.S., Princeton, 1957; M.A., 1958; Ph.D., 1960.

LEONARD S. BOBROW, *Associate Professor*, B.S., University of Miami, 1962; M.S., Northwestern University, 1964; Ph.D., 1968.

ROGER W. EHRLICH, *Associate Professor*, B.S., University of Rochester, 1965; M.S., Northwestern, 1967; Ph.D., 1969.

HERBERT A. HERCHENREDER, *Assistant Professor*, B.S., University of Missouri, 1951; M.S., Connecticut, 1957.

FRANCIS S. HILL, JR., *Associate Professor*, B.E., Yale, 1962; M.E., 1964; Ph.D., 1968.

CHARLES E. HUTCHINSON, *Professor*, B.S., Illinois Institute of Technology, 1957; M.S., Stanford, 1961; Ph.D., 1963.

WALTER H. KOHLER, *Assistant Professor*, B.S., Princeton, 1967; M.S., 1968; Ph.D., 1972.

ROBERT E. MCINTOSH, *Professor*, B.S., Worcester Polytechnic Institute, 1962; M.S., Harvard, 1963; Ph.D., University of Iowa, 1967.

JOHN W. MOHN, *Associate Professor*, M.E., Stevens Institute of Technology, 1941; B.S., Worcester Polytechnic Institute, 1947; M.S., Stanford, 1952.

RICHARD V. MONOPOLI, *Professor*, B.S., U.S. Naval Academy, 1952; M.S., Brown, 1960; Ph.D., Connecticut, 1965.

DAVID H. NAVON, *Professor*, B.E.E., City College of New York, 1947; M.S., New York University, 1950; Ph.D., Purdue, 1953.

DONALD E. SCOTT, *Associate Professor*, B.S., Connecticut, 1957; M.S., 1959; Ph.D., Worcester Polytechnic Institute, 1968.

G. DALE SHECKELS, *Professor*, B.S., University of Washington, 1938; M.S., Massachusetts Institute of Technology, 1940; Ph.D., Iowa State, 1955.

HAROLD S. STONE, *Professor*, B.S.E., Princeton, 1960; M.S., University of California, 1961; Ph.D., 1963.

TING-WEI TANG, *Professor*, B.S., National Taiwan University, 1957; M.S. Brown, 1961; Ph.D., 1964.

DONALD F. TOWSLEY, *Assistant Professor*, B.A. Texas, 1971; Ph.D., 1975.

SIGFRID YNGVESSON, *Associate Professor*, Teknologie Licentiat, Chalmers Institute of Technology, Sweden, 1964; Teknologie Doktor, 1968.

### ADJUNCT FACULTY

RONALD L. FANTE, B.S., University of Pennsylvania, 1958; M.S., Massachusetts Institute of Technology, 1960; Ph.D., Princeton, 1963.

OLAF E.H. RYDBECK M.S., Royal Institute of Technology, Stockholm, 1936; D.Sc., Harvard, 1940.

LESTER C. VAN ATTA, B.S., Reed College, 1927; Ph.D., Washington University, 1931.



## UNIVERSITY OF MASSACHUSETTS

### AFFILIATED FACULTY

MICHAEL A. ARBIB, *Professor of Computer and Information Science.*

CAXTON C. FOSTER, *Professor of Computer and Information Science.*

ROBERT M. GRAHAM, *Professor of Computer and Information Science.*

HENRY F. LEDGARD, *Associate Professor of Computer and Information Science.*

EDWARD M. RISEMAN, *Associate Professor of Computer and Information Science.*

CONRAD A. WOGGIN, *Professor of Computer and Information Science.*

### THE DOCTOR OF PHILOSOPHY DEGREE PROGRAM

There is no formal course requirement for the Ph.D. degree. Typical programs include approximately 24 credits of course work beyond the course requirements for the M.S. degree. Residency, dissertation, and examination requirements are described in the General Information Section of this *Bulletin*. A brochure containing detailed information on requirements for the Ph.D. degree in Electrical and Computer Engineering is available from the Departmental Graduate Committee.

### THE MASTER OF SCIENCE DEGREE PROGRAM

A student entering the M.S. degree program in Electrical and Computer Engineering is assigned to a faculty member who acts as his/her program adviser. With the approval of the program adviser, the student selects a unified program consisting of 33 or more graduate credits, normally from courses chosen from the fields of engineering, mathematics, physics and computer science. The student also has the option of selecting a program which involves the preparation of a thesis (ECE 800, 6 credits) with only 24 additional course credits required. In this case, the student selects a major thesis adviser, usually after one semester of study, and in consultation with the thesis adviser, submits a proposal for thesis research to the Departmental Graduate Committee.

A brochure containing detailed information on the requirements for the M.S. degree in Electrical and Computer Engineering is available from the Departmental Graduate Committee.

### RESEARCH IN ELECTRICAL AND COMPUTER ENGINEERING

The Electrical and Computer Engineering Department is conducting active research and has supporting academic programs in the following areas:

1. Computer Systems Engineering.
2. Communications and Signal Processing.
3. Systems and Control Theory.
4. Man-Machine Systems.
5. Solid State Devices and Microelectronics.
6. Electrodynamics and Plasma Physics.
7. Ocean Engineering.
8. Masers and Lasers.
9. Radio Astronomy and Antenna Systems.

## ELECTRICAL AND COMPUTER ENGINEERING

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

##### 700. SPECIAL PROBLEMS.

Recent advances and current problems in a specialized field of electrical engineering.  
Prerequisite, permission of instructor.

##### 702. ALGEBRA AND CODING

An introduction to modern algebra including groups, rings, fields and ideals. Group codes, cyclic codes including random and burst error correcting codes. Applications.

Mr. Bobrow, Mr. Wolf.

##### 703. PROBABILITY AND RANDOM PROCESSES.

Elementary probability theory including random variables, p.d.f., c.d.f., generating functions, law of large numbers. Elementary stochastic process theory including covariance and power spectral density. Applications to information theory.

Mr. Bobrow, Mr. Wolf.

##### 704. STATE VARIABLE ANALYSIS.

Matrix analysis, state variables and state space techniques. Concepts of controllability and observability. Stability analysis via Liapunov's and Popov's method, phase plane and describing function.

Mr. Hutchinson, Mr. Monopoli.

##### 705. ANALYSIS OF LINEAR SYSTEMS.

Complex variables, modern systems analysis basic to network synthesis, control systems, and communication systems; including Laplace, Fourier, and  $z$  transforms and convolution.

Mr. McIntosh, Mr. Tang.

##### 706. ELECTROMAGNETIC FIELD THEORY

Microscopic and macroscopic properties of magnetic and insulating materials; gyromagnetism and the permeability tensor; reflection and refraction, skin effect; antenna analysis; relativistic electrodynamics.

Prerequisite, ECE 257 or equivalent.

Mr. McIntosh, Mr. Tang.

##### 707. MODERN SOLID-STATE ENGINEERING

Fundamental quantum mechanical principles, a basis for advanced courses in semiconductor electronics, microwave magnetics, quantum electronics, etc. Solutions of Schrodinger's equation pertinent for electrical engineers.

Prerequisite, ECE 201 or equivalent

Mr. Navon, Mr. Yngvesson.

##### 708. SIGNAL THEORY I

Unified treatment of techniques for representation of signals and signal processing operations. Emphasis on physical interpretation of vector spaces, linear operators, transform theory, and optimal design of signals.

Mr. Franks, Mr. Hill.

##### 711. ADVANCED MICROWAVE ENGINEERING.

Analysis of waveguides, gyrators, antennas, and other microwave circuit elements; electron ballistics; ionospheric reflection; and refraction, and the permittivity tensor; microwave generators; masers and lasers.

Prerequisites, ECE 294 and 706 or equivalent.

Mr. McIntosh, Mr. Yngvesson.

##### 712. INTRODUCTION TO PLASMA DYNAMICS.

Fundamentals of plasma physics: motion of a charged particle in electromagnetic fields, magnetoionic theory, the Boltzmann and Vlasov equations for plasmas, and wave propagation through a plasma medium.

Prerequisite, ECE 706.

Mr. McIntosh, Mr. Tang.

##### 713. ADVANCED PLASMA DYNAMICS.

Review of classical kinetic theory. The BBGKY hierarchy and other kinetic equations for plasmas. Applications to waves in cold and hot plasmas, plasma radiations and instabilities.

Prerequisite, ECE 712.

Mr. McIntosh, Mr. Tang.

## ELECTRICAL AND COMPUTER ENGINEERING

## GRADUATE SCHOOL

## 721. MODERN ENGINEERING MAGNETICS.

Paramagnetism, ferro- and ferrimagnetism, magnetic domains, Ising model, spin waves, ferromagnetic resonance, ferrite devices, microwave ultrasonics in magnetic materials. Prerequisite, ECE 707. Mr. McIntosh, Mr. Yngvesson.

## 722. PHYSICAL SEMICONDUCTOR ELECTRONICS.

Crystallography of solids, band theory of solids, quantum theory of electrons in a periodic lattice, dynamics of lattice vibrations, semiconductors — equilibrium and transient behavior, modern quantum electronic devices. Prerequisite, ECE 707. Mr. Navon.

## 723. PRINCIPLES OF MASERS AND LASERS.

Quantum-mechanical description of typical maser and laser materials, fundamentals of maser amplification, analysis of maser and laser devices, review of applications. Prerequisite, ECE 707. Mr. Yngvesson.

## 725. ENERGY STORAGE AND PROCESSING (OE 721).

Methods of energy generation, conversion, and control, with emphasis on the utilization for deep-sea submersible vehicles. Mr. Monopoli, Mr. Navon, Mr. Sheckels.

## 733. DIGITAL CONTROL SYSTEMS.

Pulse transfer functions and state transition analysis applied to discrete-data systems. Nonconventional sampling. Non-linear sampled data systems. Dynamic programming and computer control. Prerequisite, ECE 704. Mr. Monopoli, Mr. Hutchinson.

## 734. OPTIMUM CONTROL SYSTEMS.

Analytical design of optimum linear systems. Calculus of variations. Pontryagin's Maximum Principle, and applications to design of optimum systems. Minimum mean square estimation and control. Prerequisite, ECE 704. Mr. Hutchinson, Mr. Monopoli.

## 735. ADAPTIVE CONTROL.

The problem of system identification, performance criteria and decision-making, and the implementation of adaptive techniques. Application of adaptive techniques to aircraft flight control. Prerequisite, ECE 733, 734. Mr. Hutchinson, Mr. Monopoli.

## 736. DYNAMICS AND CONTROL OF MARINE VEHICLES (OE 752).

The equations of motion for a marine vehicle; the stability and dynamics for control. Mr. Hutchinson.

## 741. SIGNAL THEORY II.

Signal Space methods applied to random processes, giving the modern interpretation of optimum filtering, signal parameter estimation, and signal detection. Many examples of practical applications. Mr. Franks, Mr. Hill.

## 743. NAVIGATION (OE 751).

A survey of the principles of navigation. Emphasis on the information-processing involved and error analysis. Mr. Hutchinson.

## 745. INFORMATION TRANSMISSION SYSTEMS.

Practical topics in the design of data transmission systems. Modulation, coding, and multiplexing formats. Fixed and adaptive channel equalization. System performance evaluation. Prerequisite, ECE 703, or equivalent. Mr. Franks, Mr. Hill, Mr. Wolf.

## 746. STATISTICAL COMMUNICATION THEORY.

Basic theories of signal parameter estimation and signal detection. Bayes and maximum likelihood decision and estimation rules. Wiener and Kalman filters for continuous waveform estimation. Prerequisite, ECE 703 or equivalent. Mr. Franks, Mr. Hill, Mr. Wolf.

## 748. NETWORK SYNTHESIS.

A survey of practical methods for design of filter networks

Passive LC and active RC design techniques. Distributed-element filters. Variable-parameter filters. Digital filters. Prerequisite, ECE 204 or equivalent. Mr. Franks.

## 750. GRAPH THEORY AND ITS APPLICATIONS.

Fundamental concepts of graph theory including circuits, cut-sets, paths, and duality. Application to network analysis and synthesis, switching theory, variable-length and error-correcting codes, and communication networks. Mr. Bobrow.

## 751. SWITCHING AND AUTOMATA THEORY.

Homing and diagnosis of sequential machines, fault detection and diagnosis of combinatorial and sequential networks. State assignment in sequential machines, linear sequential machines, universal modules, and related decision problems. Prerequisites, ECE 510, CS 570, or equivalent. Mr. Ehrlich.

## ECE 752. OPTIMIZATION THEORY AND PRACTICE.

Mathematical formulation and techniques of optimization; constrained extremization of functions of several variables; geometric and linear programming; calculus of variations; dynamic programming; search techniques; game theory. Mr. Hill.

## 762. INTRODUCTION TO SPEECH ANALYSIS.

The acoustics of speech production and the engineering analysis techniques employed in speech processing. Mr. Thomas.

## 763. ADVANCED SPEECH PROCESSING.

Advanced studies of speech-processing techniques with emphasis on current literature in speech analysis, transmission, synthesis, and recognition by machine. Prerequisite, ECE 762. Mr. Thomas.

## 764. UNDERWATER ACOUSTICS (OE 701).

The principles, effects, and phenomena of underwater sound and its application to practical problems. Prerequisite, ECE 306, 606. Mr. Hutchinson, Mr. Thomas, Mr. Russell.

## 785. SELECTED TOPICS IN CONTROL SYSTEMS.

Topics selected from the current literature. An investigation in depth of problems relating to particular aspects of automatic control theory. Credit, 1-3.

## 786. SELECTED TOPICS IN COMMUNICATIONS.

Topics for various aspects of present interest in the field of communications with emphasis on concurrent reading of the literature. Credit, 1-3.

## 787. SELECTED TOPICS IN COMPUTER ENGINEERING.

Topics of current interest in computers, automata, and related areas. Specific topics selected from the literature. Credit, 1-3.

## 793, 794. SEMINAR IN ELECTRICAL ENGINEERING.

Presentations of current research activities and literature by faculty and graduate students. Credit, 1 each semester.

## 800. MASTER'S THESIS.

An individual theoretical and/or experimental investigation or a design problem terminating with an acceptable thesis. The research proposal is to be approved at least five months before graduation.

## 900. DOCTORAL DISSERTATION.

Credit, 18.

COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS  
(For either major or minor credit).

## 510. DIGITAL CIRCUIT THEORY.

An introduction to the theory of digital circuits stressing general techniques for the analysis and synthesis of combinational and sequential logic systems. Prerequisite, junior standing.

## UNIVERSITY OF MASSACHUSETTS

### 565. RANDOM SIGNAL THEORY.

Introduction to probability and stochastic processes. Correlation theory and its application to electrical engineering problems in communication and control systems.

Prerequisite, ECE 142.

Mr. Franks, Mr. Hutchinson, Mr. Scott.

### 566. SIGNAL PROCESSING AND COMMUNICATION SYSTEMS I.

Principles of design of modern communication systems. Mathematical description of digital and analog signals. Basic limitations of modulation techniques and information capacity of transmission systems.

Prerequisites, ECE 202, 204.

Mr. Franks, Mr. Hill.

### 567. SIGNAL PROCESSING AND COMMUNICATION SYSTEMS II.

Techniques for evaluating performance of modulation and information transmission systems. Extraction of signals from noise. Minimum error signal estimation and detection.

Prerequisites, ECE 266, 265 or permission of instructor.

Mr. Franks, Mr. Hill

### 570. SOLID STATE DEVICES.

Power rectifiers, power transistors, high frequency, high power transistors, thyristors, power circuits: regulators, inverters, converters and cyclo-converting, phase-control circuits, motor control circuits.

Prerequisites, ECE 201, 202. Mr. Navon, Mr. Yngvesson.

### 571. MICROELECTRONICS.

Principles and applications of microelectronics with particular emphasis on silicon monolithic integrated circuits. Fundamental limitations of microminiaturization, design constraints imposed by the monolithic technique, planar technology, digital and linear microcircuits.

Prerequisite, ECE 201.

Mr. Navon

### 578. DIGITAL SYSTEM DESIGN

A design-oriented approach to the structure and design of general purpose digital computers.

Prerequisite, ECE 210; Recommended, COINS 201.

Mr. Edwards, Mr. Ehrich, Mr. Glorioso.

### 587. MARINE INSTRUMENTATION.

A survey of the oceanographic parameters of interest to ocean engineers; the theory of measurement for those parameters. Typical examples of existing measuring equipment.

Mr. Hutchinson.

### 592. FEEDBACK CONTROL SYSTEMS I

Time domain and frequency domain analysis and synthesis techniques for linear continuous control systems. The relationships between these techniques.

Prerequisites, ECE 142 or permission of instructor.

Mr. Hutchinson, Mr. Monopoli, Mr. Scott.

### 593. FEEDBACK CONTROL SYSTEMS II.

The analysis of nonlinear continuous control systems and an introduction to digital control systems and optimization techniques.

Prerequisite, ECE 290.

Mr. Hutchinson, Mr. Monopoli, Mr. Scott.

### 594. MICROWAVE ENGINEERING I.

Electromagnetic theory applied to microwave propagation in waveguides and coaxial lines. Microwave circuit theory with applications to passive microwave networks.

Prerequisite, ECE 258.

Mr. McIntosh, Mr. Tang, Mr. Yngvesson.

### 595. MICROWAVE ENGINEERING II.

Continuation of ECE 594, selected topics in the areas of solid state devices, wave propagation, antennas, and plasmas.

Prerequisite, ECE 594.

Mr. McIntosh, Mr. Tang, Mr. Yngvesson.

### 598. BIOMEDICAL ENGINEERING I.

Techniques and concepts from control and communication

## ELECTRICAL AND COMPUTER ENGINEERING

theory useful in biological, medical, and psychophysical research.

Prerequisite, permission of instructor

Mr. Scott.

### 599. BIOMEDICAL ENGINEERING II.

Engineering analysis of the visual, position-motion sensing, taste and smell biological communication channels; human tracking capabilities, analog and hybrid modeling.

Prerequisite, ECE 598.

Mr. Scott.

### 606. ACOUSTICS.

The fundamentals of sound generation, propagation, and detection. Application of theory to underwater sound and human speech.

Mr. Thomas.

### 611. APPLIED NONLINEAR ANALYSIS.

The analysis of nonlinear mechanical and electrical systems. Numerical, graphical, and analytical methods used to determine the behavior of modern nonlinear devices.

Prerequisite, Math 174.

Mr. McIntosh.

### 642. NON-NUMERICAL PROCESSING

Introduction to basic mathematical and logical concepts relevant to description and manipulation of information structures such as lists, trees, and graphs.

Prerequisite, COINS 233.

Mr. Glorioso, Mr. Kohler.

### 644. PROGRAMMING STRUCTURES.

Introduction to basic structures of algorithms and programming languages. Convergence of algorithms. Introduction to logic and programming languages for description and implementation of algorithms.

Prerequisite, COINS 201.

Mr. Ehrich, Mr. Kohler

### 654. COMPUTER SYSTEMS LABORATORY III

Project laboratory in advanced computer systems engineering including designs of integrated hardware/software systems and studies of current computer techniques.

Nine laboratory hours.

Prerequisite, permission of instructor.

Staff.

### 656. INTRODUCTION TO AUTOMATA THEORY

An introduction to formal processes of computation. Computability, automata, algorithms, recursive functions. Formal systems, computing power of machines, and automata as examples of formal systems.

Prerequisite, permission of instructor

Mr. Ehrich, Mr. Kohler.

### 660. COMPUTER GRAPHICS.

Basic organization of computer-driven graphical display systems. Methods for generation and manipulation of vectors and characters for real-time display. Data structures for picture and text processing.

Prerequisites, COINS 233, ECE 642.

Mr. Ehrich, Mr. Glorioso.

### 662. SELF-ORGANIZING SYSTEMS AND PATTERN RECOGNITION.

Several aspects of self-organizing systems and pattern recognition including machine intelligence, adaptation, learning, and self-repair.

Mr. Glorioso.

### 666. ANALOG AND HYBRID COMPUTERS.

Designed for computer science or engineering students interested in the hybrid computer as a computational tool. Review of analog and digital computers and their combination.

Prerequisite, permission of instructor

Mr. Hutchinson, Mr. Monopoli.

### 668. ADVANCED SWITCHING THEORY.

Topics of contemporary interest in digital switching theory and logical design. State-of-the-art techniques in computer hardware design.

Prerequisite, ECE 510.

Mr. Stone.



## ENGLISH

### English

#### GRADUATE FACULTY

DAVID R. CLARK, *Professor and Head of the Department of English*, B.A., Wesleyan University, 1947; M.A., Yale, 1950; Ph.D., 1955.

RICHARD NOLAND, *Professor and Graduate Program Director*, B.A., Emory, 1954; M.D., 1958; M.A., Columbia, 1961; Ph.D., 1968.

TAMAS ACZEL, *Professor*, B.A., University of Budapest, 1948; M.A., 1950.

GARY L. AHO, *Associate Professor*, B.A., Portland State College, 1959; Ph.D., University of Oregon, 1966.

JEREMIAH ALLEN, *Professor and Dean of Humanities and Fine Arts*, B.A., Duke, 1947; M.A., Tufts, 1948; Ph.D., Colorado, 1956.

THOMAS L. ASHTON, *Associate Professor*, B.A., City College of New York, 1963; M.A., Columbia, 1964; Ph.D., 1969.

ROBERT E. BAGG, *Professor*, B.A., Amherst, 1957; M.A., Connecticut, 1961; Ph.D., 1965.

LEON BARRON, *Associate Professor*, B.A., Massachusetts, 1947; M.A., Minnesota, 1947; Ph.D., Harvard, 1960.

NANCY LEE BEATY, *Associate Professor*, B.A., Wellesley, 1943; M.A., Yale, 1947; Ph.D., 1956.

BERNARD BELL, *Associate Professor*, B.A., Howard University, 1962; M.A., 1966; Ph.D., Massachusetts, 1970.

NORMAND BERLIN, *Professor*, B.A., New York University, 1953; M.A., Columbia, 1956; Ph.D., California at Berkeley, 1964.

HOWARD O. BROGAN, *Commonwealth Professor*, B.A., Grinnell College, 1936; M.A., State University of Iowa, 1938; Ph.D., Yale, 1941.

GEORGE CAREY, *Associate Professor*, B.A., Middlebury, 1958; M.A., Indiana, 1962; Ph.D., 1966.

JULES CHAMETZKY, *Professor*, B.A., Brooklyn College, 1950; M.A., Minnesota, 1952; Ph.D., 1958.

DONALD S. CHENEY, *Professor*, B.A., Yale, 1954; M.A., 1957; Ph.D., 1961.

JOHN CLAYTON, *Associate Professor*, B.A., Columbia College, 1956; M.A., New York University, 1959; Ph.D., Indiana, 1966.

DAN S. COLLINS, *Associate Professor*, B.A., Pennsylvania, 1941; M.A., University of North Carolina, 1951; Ph.D., 1962.

ROBERT P. CREED, *Professor*, B.A., Swarthmore College, 1948; M.A., Harvard, 1949; Ph.D., 1956.

MARGARET CULLEY, *Assistant Professor*, B.A., Manhattanville College, 1964; M.A., Rutgers University, 1965; Ph.D., University of Michigan, 1972.

GEORGE CUOMO, *Professor*, B.A., Tufts, 1952; M.A., Indiana, 1954.

## GRADUATE SCHOOL

ARLYN DIAMOND, *Associate Professor*, B.A., California, 1961; Columbia, 1962; Ph.D., California at Berkeley, 1970.

VINCENT DIMARCO, *Associate Professor*, B.A., New York at Buffalo, 1966; M.A., Pennsylvania, 1967; Ph.D., 1972.

JOSEPH W. DONOHUE, JR., *Professor*, B.A., Johns Hopkins, 1956; M.A., Georgetown, 1961; Ph.D., Princeton, 1965.

AUDREY R. DUCKERT, *Professor*, B.A., Wisconsin, 1948; M.A., 1949; Ph.D., Radcliffe College, 1959.

LEE R. EDWARDS, *Associate Professor*, B.A., Swarthmore, 1962; M.A., California at Berkeley, 1965; Ph.D., 1969.

MICHAEL EGAN, *Associate Professor*, B.A., Witwatersrand University, 1963; M.A. Fitzwilliam College, 1965; Ph.D., 1968.

CHARLES EIOSVIK, *Assistant Professor*, B.A., University of South Dakota, 1965; M.A., 1966; Ph.D., University of Illinois, 1970.

EVERETT H. EMERSON, *Professor*, B.A., Harvard, 1948; M.A., Duke, 1949; Ph.D., Louisiana State, 1955.

KIRBY FARRELL, *Associate Professor*, B.A., Clark, 1964; M.A., Rutgers, 1968; Ph.D., 1972.

ANDREW FETLER, *Associate Professor*, B.S., Loyola, 1959; M.F.A., State University of Iowa, 1964.

JOSEPH FRANK, *Professor*, B.A., Harvard, 1939; M.A., 1947; Ph.D., 1953.

JAMES A. FREEMAN, *Associate Professor*, B.A., Amherst, 1956; Ph.D., Minnesota, 1968.

ROBERTS W. FRENCH, *Associate Professor*, B.A., Dartmouth, M.A., Yale, 1959; Ph.D., Brown, 1964.

ERNEST GALLO, *Professor*, B.A., St. John's, 1954; M.A., New York, 1957; Ph.D., 1965.

WALKER GIBSON, *Professor*, B.A., Yale, 1940; M.A., University of Iowa, 1946.

MORRIS GOLDEN, *Professor*, B.A., City College of New York, 1948; M.A., New York University, 1949; Ph.D., 1953.

RAYMOND GOZZI, *Associate Professor*, B.A., Amherst College, 1942; M.A., Columbia, 1947; Ph.D., New York University, 1957.

RICHARD HAVEN, *Professor*, B.A., Harvard, 1948; M.A., Princeton, 1952; Ph.D., 1958.

JOHN H. HICKS, *Professor*, B.A., Middlebury, 1941; M.A., Boston University, 1952; Ph.D., 1961.

PRISCILLA G. HICKS, *Assistant Professor*, B.A., Wellesley, 1948; M.A., University of Michigan, 1949; Ph.D., Boston University, 1960.

ERNEST H. HOFER, *Professor*, B.A., Brown, 1945; M.A., 1947; Ph.D., Cornell, 1959.

FLORIANA T. HOGAN, *Associate Professor*, B.S., Boston University, 1940; M.A., 1941; Ph.D., 1955.

ROBERT HOOPES, *Professor*, A.B., Cornell, 1941; A.M., Boston University, 1942; M.A., Harvard, 1948; Ph.D., 1949.

## UNIVERSITY OF MASSACHUSETTS

## ENGLISH

BETTY A. HUNT, *Assistant Professor*, B.A., University of Georgia, 1950; M.A., Indiana, 1953; Ph.D., Shakespeare Institute of the University of Birmingham, England, 1964.

JOHN A. HUNT, *Associate Professor*, B.A., Washington & Lee University, 1952; Ph.D., Shakespeare Institute, Stratford-on-Avon, England, 1965.

EDWARD JAYNE, *Assistant Professor*, B.A., California at Berkeley, 1957; M.A., 1962; Ph.D., New York at Buffalo, 1970.

DONALD JUNKINS, *Professor and Director of the M.F.A. Program*, B.A., Massachusetts, 1953; S.T.B., Boston, 1955, S.T.M., 1957; M.A., 1959, Ph.D., 1963.

SIDNEY KAPLAN, *Professor*, B.A., College of the City of New York, 1942; M.A., Boston University, 1948; Ph.D., Harvard, 1960.

ROBERT KEEFE, *Assistant Professor*, B.A., Brandeis, 1964; M.A., Princeton, 1966; Ph.D., 1968.

ARTHUR KINNEY, *Associate Professor*, B.A., Syracuse, 1955; M.S., Columbia, 1956; Ph.D., University of Michigan, 1963.

G. STANLEY KOEHLER, *Professor*, B.A., Princeton, 1936; M.A., Harvard, 1937; M.A., Princeton, 1938; Ph.D., 1942.

JOSEPH LANGLAND, *Professor*, B.A., State University of Iowa, 1940; M.A., 1941.

JAMES LEHENY, *Associate Professor*, B.A., Connecticut, 1961; M.A., Washington University, 1963; Ph.D., 1968.

MASON I. LOWANCE, JR., *Professor*, B.A., Princeton, 1960; B.A., Oxford, 1964; M.A., 1966; Ph.D., Emory, 1967.

PAUL L. MARIANI, *Professor*, B.A., Manhattan College, 1962; M.A., Colgate, 1964, Ph.D., City University of New York, 1967.

JAMES MATLACK, *Assistant Professor*, B.A., Princeton, 1960; B.A., M.A., Oxford University, 1962; M.A., Yale, 1964; Ph.D., 1967.

HAROLD MCCARTHY, *Professor*, B.A., Massachusetts, 1941; M.A., Harvard, 1942; Ph.D., 1950.

JOHN H. MITCHELL, *Professor*, B.S., Bowdoin, 1943; M.A., Harvard, 1947.

CHARLES MORAN, *Associate Professor*, A.B., Princeton, 1958; A.M., Brown, 1962; Ph.D., 1967.

ARTHUR B. MUSGRAVE, *Professor and Director of Fellowship Program for Journalists*, B.S., Boston University, 1951; M.S., 1951; Ph.D., Minnesota, 1961.

JOHN R. NELSON, JR., *Associate Professor*, B.A., Hamilton College, 1959; M.A., Maine, 1962; Ph.D., Oregon, 1967.

JAN NEUGEBOREN, *Associate Professor and Resident Writer*, B.A., Columbia, 1959; M.A., Indiana, 1963.

WILLIAM G. O'DONNELL, *Professor*, B.S., Massachusetts, 1938; M.A., Yale, 1940; Ph.D., 1942.

ALEX PAGE, *Professor*, B.A., Vermont, 1948; M.A., Harvard, 1949; Ph.D., 1953.

DAVID PAROISSIEN, *Associate Professor*, B.A., University of Hull, England, 1961; M.A., New Mexico Highlands University, 1965; Ph.D., California at Los Angeles, 1968.

LAWRENCE PINKHAM, *Associate Professor*, B.A., Maine, 1950; M.S., Columbia, 1951.

ARTHUR W. PLUMSTEAD, *Professor*, B.A., Western Ontario, 1955; M.A., Rochester, 1957; Ph.D., 1965.

DARIO POLITELLA, *Associate Professor*, B.A., Massachusetts, 1947; M.A., Syracuse, 1949; Ph.D., 1965.

DAVID T. PORTER, *Professor*, B.A., Hamilton, 1950; Ph.D., Rochester, 1963.

JONATHAN QUICK, *Assistant Professor*, B.A., Rutgers, 1963; M.A., Yale, 1966; Ph.D., 1968.

MEREDITH B. RAYMOND, *Associate Professor*, B.S., Bridgewater State, 1939; M.A., Middlebury, 1943; Ph.D., Boston University, 1964.

FREDERICK ROBINSON, *Assistant Professor*, B.A., University of Redlands, 1964; M.A., University of Washington, 1966; Ph.D., 1972.

SEYMOUR RUDIN, *Professor*, B.A., City College of New York, 1941; M.S., 1943; Ph.D., Cornell, 1953.

PAUL F. SAAGPAKK, *Professor*, Ph.D., Columbia, 1966.

JACK SHADOIAN, *Associate Professor*, B.A., City College of New York, 1963; M.A., Connecticut, 1965, Ph.D., 1967.

JAMES SHAW, *Lecturer and Associate Dean of the College of Arts and Sciences*, B.A., Otterbein, 1954; M.A., University of Michigan, 1957; Ph.D., 1966.

ARNOLD J. SILVER, *Associate Professor*, B.A., New York University, 1947; M.A., Columbia, 1948; Ph.D., 1958.

JOHN E. SITTER, *Associate Professor*, B.A., Harvard, 1966, Ph.D., Minnesota, 1969.

CHARLES KAY SMITH, *Assistant Professor*, B.A., Amherst, 1957.

BERNARD SPIVACK, *Professor*, B.A., Alabama, 1931; M.A., Harvard, 1932; Ph.D., Columbia, 1950.

CHARLOITE K. SPIVACK, *Professor*, B.A., New York at Albany, 1947; M.A., Cornell, 1948; Ph.D., University of Missouri, 1954.

KATHLEEN M. SWAIM, *Professor*, B.A., Gettysburg College; M.A., Penn State, 1955, M.A., Middlebury, 1963, Ph.D., Pennsylvania, 1966.

JAMES TATE, *Assistant Professor*, B.A., Kansas State College of Pittsburg, 1965; M.F.A., Iowa, 1967.

ROBERT G. TUCKER, *Associate Professor*, B.A., Amherst, 1949; M.A., Harvard, 1951; Ph.D., State University of Iowa, 1961.

## ENGLISH

FREDERICK W. TURNER, III, *Associate Professor*, B.A., Denison, 1959; M.A., Ohio, 1961; Ph.D., Pennsylvania, 1965.

JOHN C. WESTON, JR., *Professor*, M.A., Chicago, 1950; Ph.D., North Carolina, 1956.

CYNTHIA WOLFF, *Professor*, B.A., Radcliffe, 1958; Ph.D., Harvard, 1965.

MICHAEL WOLFF, *Professor*, B.A., Cambridge, 1948; M.A., St. John's, 1955; Ph.D., Princeton, 1958.

HOWARD ZIFF, *Associate Professor*, B.A., Amherst, 1952; Advanced Fellow Certificate, Columbia, 1964.

## MASTER OF FINE ARTS IN ENGLISH

This degree, based upon a two- to three-year program of 60 hours, is designed for qualified graduate students who are determined to become reputable writers of fiction, poetry or drama, and who wish to prepare themselves for the variety of positions related to the profession of writer, including the college teaching of English.

The normal standards for admission to graduate study in English apply, except that applicants for the M.F.A. must also submit supplementary original writing in fiction, poetry or drama: two short stories, or 30 to 40 pages of fiction; from 10 to 15 pages of poetry; or one full act of a play. Manuscripts should be mailed separately to the Director of the M.F.A. Program in English, Bartlett Hall, University of Massachusetts, Amherst, MA 01002.

The candidate must either pass one foreign language examination or translate a body of work from another language. He must pass an oral examination including a defense of his thesis, which should constitute a book-length manuscript of fiction, poetry or drama, of publishable quality.

The 60 hours of work are apportioned as follows: 12 hours of courses in imaginative writing; 18 hours of thesis credit, incorporated into the course structure of the credits in imaginative writing, beginning with the second semester of such studies; six hours in another appropriately related field of study; 24 hours in American and English literature and language, including at least two courses in the modern and contemporary genre of his speciality (fiction, poetry or drama), and one each in either modern or contemporary courses in the other two genres.

Application forms should be obtained from and returned to the Graduate School. Deadline for applications is March 1, although applicants are encouraged to submit manuscripts earlier.

## PH.D. FOREIGN LANGUAGE REQUIREMENTS

The Department requires proficiency in one foreign language to be demonstrated by successful completion of two graduate courses in comparative literature; or by successfully completing one graduate-level course in the area of the language chosen; or proficiency in two foreign languages, to be demonstrated by passing the standard foreign-language examinations. Transfer students must fulfill this requirement according to these standards, unless they have been certified as to language proficiency before arrival; others may have par-

tially fulfilled the requirement while earning the master's degree.

All graduate students should secure from the Department of English detailed information on requirements for the degrees of Ph.D., M.F.A., M.A.T., and M.A.

## ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

### COURSES OPEN TO GRADUATE STUDENTS ONLY

#### 700. SPECIAL PROBLEMS.

For students wishing to do special work not covered by other courses. Permission of the Graduate Program Director and the instructor required. The instructor supervises and evaluates the work. *Credit, 3-12.*

#### 701. HISTORY OF THE ENGLISH LANGUAGE.

Development of the English language. Continuing as well as accomplished changes and variations in sounds, forms, and usage. Survey of dictionaries and grammar in context of teaching. *Ms. Duckert.*

#### 702. OLD ENGLISH.

Introduction to Old English.

*Mr. Creed, Ms. Duckert, Mr. Aho.*

#### 703. MIDDLE ENGLISH.

The language and documents representing the chief dialects. *R. Creed*

#### 705. OLD ENGLISH LITERATURE.

Reading of various Old English works, stressing Beowulf. Prerequisite, English 702, or equivalent.

*Mr. Creed, Ms. Duckert.*

#### 706. MIDDLE ENGLISH LITERATURE.

Representative poems, verse plays, and selected prose, exclusive of Chaucer.

Prerequisite, English 703 or equivalent.

*Ms. Diamond, Mr. DiMarco.*

#### 708. CHAUCER.

Chaucer's *Canterbury Tales* and the critical problems implicit in his works.

*Mr. DiMarco, Mr. Gallo.*

#### 709. THE WORKS OF CHAUCER'S FRENCH AND ITALIAN PERIODS.

The complaints, the dream-visions, the later short poems, Boethius, and Troilus as combinations of medieval art and thought with pre-Renaissance motifs. *Mr. Gallo.*

#### 710. HISTORICAL STUDIES IN THE LANGUAGE OF LITERATURE.

The linguistic milieu in which monuments of British and American literature were created. Emphasis on matters critical to accurate reading, e.g., semantic shifts, changes in syntax and rhyme, regional and social variations. Examination of selected works according to interests of the class.

*Ms. Duckert.*

#### 712. STUDIES IN RHETORIC AND PROSE STYLE.

Brief readings in Plato and Aristotle as well as in the "new rhetorics" of our own time. Detailed problems in the study of style: words and meanings, the implications of sentence structures, irony, metaphor, the cliché.

*Credit, 3 for two semesters. Mr. Gibson, Mr. Smith.*

#### 713. STUDIES IN FILM.

The uses of film in an English Department. The application of film terminology, theory, and aesthetics. The rhetorical elements of film and their relationship to other forms of communication. The relationship of film to print literature. Procedures for setting up film-related courses, obtaining films, and teaching film as film and as an extension of traditional literature.



## UNIVERSITY OF MASSACHUSETTS

## ENGLISH

Prerequisite, teacher of Rhetoric 180 or permission of instructor.  
Mr. Eidsvik, Mr. Harrington.

### 718. THE ENGLISH LITERARY PROFESSION.

An introduction to the professional standards, aims, and procedures of scholarship and criticism.

Mr. Kinney, J.D. Reed.

### 721. THE DEVELOPMENT OF THE ENGLISH NOVEL.

Readings in the English novel to the late 19th century, from Richardson to Conrad, with attention to some ten representative novels.

Mr. Golden, Mr. Page, Ms. Wolff.

### 730. LITERATURE OF THE 16TH CENTURY.

Christian and Humanist ideals reflected in the poetry of Skelton, Wyatt, Surrey, Sackville, Raleigh, Sidney, and Spenser.

Mr. Cheney, Mr. French, Mr. Kinney, Mr. Spivack.

### 731. THE ENGLISH BIBLE AS LITERATURE.

The several main genres of Biblical literature in their historical setting. Principles in interpretation; the literary influence of the Authorized Version.

Mr. Collins, Mr. Freeman.

### 732. SHAKESPEARE.

Close examination of Shakespearian plays representing the characteristics of his dramatic art.

Mr. Berlin, Mr. Donohue, Mr. Farrell, Mr. Jorgens, Mr. Spivack, Ms. Spivack.

### 734. ELIZABETHAN AND JACOBAN DRAMA.

Representative plays by Shakespeare's contemporaries, 1580-1642; emphasis on works by Marlowe, Jonson, Beaumont and Fletcher, and Ford.

Mr. Berlin, Ms. Spivack.

### 737. LITERATURE OF THE 17TH CENTURY.

Readings in 17th century prose and poetry from Donne to Marvell; analysis of the more significant areas of thought and style.

Ms. Beaty, Mr. Cheney, Mr. Collins, Mr. Current, Mr. Frank, Mr. Freeman, Mr. French, Mr. Harrington, Mr. Jenkins, Mr. Koehler, Mr. Shadoian.

### 738. MILTON.

The major and some of the minor works; related studies in Milton scholarship and criticism.

Ms. Beaty, Mr. Collins, Mr. Current, Mr. Freeman, Mr. French, Mr. Koehler, Ms. Swain.

### 740. LITERATURE OF THE RESTORATION AND 18TH CENTURY.

Readings in English poetry and prose from Dryden to Burns, emphasizing the major writers and including representative plays.

Mr. Barron, Mr. Golden, Mr. Leheny, Mr. Shaw, Mr. Sitter, Mr. Smith, Mr. Weston, Ms. Wolff.

### 745. LITERATURE OF THE ROMANTIC PERIOD.

Readings in the major poetry, representative essays, and selected critical writings, including Blake, Coleridge, Wordsworth, Keats, Shelley, Byron, and Hazlitt.

Mr. Ashton, Mr. Bagg, Mr. Barnard, Mr. Brogan, Mr. Haven.

### 746. LITERATURE OF THE VICTORIAN AGE.

Readings in the chief poets and prophets of the Victorian Age. Emphasis on Browning, Tennyson, Carlyle, Newman, Mill, Ruskin, Arnold, and Pater.

Mr. Keefe, Mr. Noland, Ms. Raymond, Mr. Silver, Mr. Wolff.

### 750. EARLY AMERICAN LITERATURE.

The major writers and intellectual movements in America during the 17th and 18th centuries.

Mr. Emerson, Mr. Lowance.

### 753. AMERICAN ROMANTICISM.

The development of American romanticism, under European influence, stressing Cooper, Emerson, Thoreau, Poe, Hawthorne, Whitman, and Melville.

Ms. Culley, Mr. Emerson, Mr. Gozzi, Mr. Kaplan, Mr. Matlack, Mr. McCarthy, Mr. Plumstead, Mr. Robinson.

### 755. AMERICAN REALISM.

The development of American realism from 1865 to 1914, stressing Twain, Henry James, Howells, and Henry Adams.

Ms. Culley, Mr. Gozzi, Mr. Matlack, Mr. O'Donnell, Mr. Robinson, Mr. Turner.

### 770. CONTEMPORARY DRAMA.

British and American Drama from 1950 to the present.

Mr. Rudin.

### 771. CONTEMPORARY FICTION.

British and American fiction from 1945 to the present.

Mr. Chametzky, Mr. Clayton, Mr. Hicks, Mr. Moran, Mr. Nelson.

### 772. CONTEMPORARY POETRY.

British and American poetry from 1945 to the present.

Mr. Koehler, Mr. Jenkins, Mr. Langland, Mr. Tate, Mr. Tucker.

### 774. LITERARY CRITICISM.

Critical theory and practice with emphasis on the major philosophical critics beginning with Plato and Aristotle.

Mr. Copeland, Mr. Clark, Mr. Jayne.

### 775. MODERN DRAMA.

Modern British, Irish, and American drama from 1890 to 1950. Emphasis on major figures: Shaw, Synge, O'Neill.

Mr. Aczel, Mr. Donohue, Ms. Hogan, Mr. Rudin.

### 776. MODERN FICTION.

Intensive study, including papers and oral reports of important works by Henry James, Joseph Conrad, James Joyce, D. H. Lawrence, William Faulkner and other masters of the modern novel between about 1900 and 1940.

Mr. Chametzky, Mr. Clayton, Ms. Edwards, Mr. Hicks, Mr. Quick.

### 777. MODERN POETRY.

The growth and development of modern poetry in English from 1912 to WW II, including Yeats, Stevens, Frost, Eliot, Pound, Williams; Also Cummings, L. Hughes, Moore, Ransom, Auden, Crane, Robinson. Brief Background materials out of Hopkins, Dickinson, and Hardy.

Mr. Clark, Mr. Koehler, Mr. Langland, Mr. Mariani.

### 779. MAT SUPERVISED STUDENT TEACHING.

Students registering for this course should immediately contact the MAT Program Director. Supervision is accomplished through a seminar of all enrollees, which meets by arrangement. Supervision varies for in-service candidates.

### 780. IMAGINATIVE WRITING: POETRY.

Writer's workshop with emphasis on poetry. May be repeated by candidates for the M.F.A. for a total of 12 credits.

Mr. Jenkins, Mr. Langland, Mr. Tucker.

### 781. IMAGINATIVE WRITING: PROSE.

Writer's workshop with emphasis on fiction. May be repeated by M.F.A. candidates for a total of 12 credits.

Mr. Aczel, Mr. Fetter, Mr. Neugeboren, Mr. Swados.

### 790. FOLKLORE.

Folk narrative: tale, myth, and legend in relation to written literature.

Mr. Carey, Ms. Green, Mr. Turner.

### 810 — 819. SEMINARS IN ENGLISH LITERATURE

Credit, 3 each semester.

### 820 — 829. SEMINARS IN THE ENGLISH LANGUAGE.

Credit, 3 each semester.

### 830 — 839. SEMINARS IN AMERICAN LITERATURE.

Credit, 3 each semester.

## ENTOMOLOGY

- 840 — 849. SEMINARS IN CRITICISM.  
*Credit, 3 each semester.*
- 850 — 859. SEMINARS IN EDITING.  
*Credit, 3 each semester.*
- 860 — 869. SEMINARS IN WRITING.  
*Credit, 3 each semester.*
- 870 — 879. SEMINARS IN LINGUISTICS.  
*Credit, 3 each semester.*
800. MASTER'S THESIS.  
May be repeated by M.F.A. candidates for a total of 18 credits.  
*Credit, 3-9.*
900. DOCTORAL DISSERTATION. *Credit, 18.*

### COURSE OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

634. ADVANCED TECHNICAL WRITING.  
Case studies in engineering and industrial reporting, advertising, and promotional literature, scientific journalism, and graphic techniques. Given in alternate years.  
Prerequisite, permission of instructor. Mr. Mitchell.

### RELATED COURSES

See Comparative Literature.

## Entomology

### GRADUATE FACULTY

JOHN G. STOFFOLANO, *Associate Professor and Acting Chairman of the Department of Entomology*, B.S., New York at Oneonta, 1962; M.S., Cornell, 1967; Ph.D., Connecticut, 1970.

PEDRO BARBOSA, *Assistant Professor and Graduate Program Director*, B.S., City College of New York, 1966; M.S., Massachusetts, 1969; Ph.D., 1971.

WILLIAM B. BECKER, *Professor*, B.S., New York State College of Forestry at Syracuse University, 1934; M.S., Massachusetts, 1937; Ph.D., 1945.

JOHN D. EDMAN, *Associate Professor*, B.S., Gustavus Adolphus College, 1959; M.S., Nebraska, 1961; Ph.D., Kansas State, 1964.

ADRIAN G. GENTILE, *Adjunct Associate Professor*, Doctor of Agriculture, University of Naples, 1950; M.Sc., California, 1956; Ph.D., 1966.

HENRY H. HAGEDORN, *Assistant Professor*, B.S., Wisconsin, 1965; M.S., 1966; Ph.D., California, 1970.

JOHN F. HANSON, *Professor*, B.S., Massachusetts, 1937; M.S., 1938; Ph.D., 1943.

T. MICHAEL PETERS, *Associate Professor*, B.S., Long Beach State College, 1959; M.S., Minnesota, 1961; Ph.D., 1964.

RONALD J. PROKOPY, *Associate Professor*, B.S., Cornell, 1957; Ph.D., 1964.

A candidate for the Master of Science degree in Entomology, in addition to meeting the requirements of the Graduate School must ordinarily complete the course requirements of Entomology, 655, 680, 682, and related sciences or their equivalents, plus Entomology 579 and other courses assigned by the student's adviser. Continuous registration in at least one graduate seminar is required throughout the period of residence. A thesis is usually required, but in special cases course credits in

## GRADUATE SCHOOL

the 700-800 series, including at least three credits in Ent. 700, may be substituted.

Requirements for the Doctor of Philosophy degree include the course requirements for the M.S. degree, as well as those established by the Graduate School and by the student's Guidance Committee.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

(Most graduate-level courses in the department are given on a rotating basis, subject to change on student demand.)

#### 700. SPECIAL PROBLEMS.

Research on some problem in Entomology. If submitted in lieu of a thesis, original research is expected; and two copies of a written report, approved by two members of the staff, are required by the Department. *Credit, 1-6 per semester.*

#### 705. PRINCIPLES OF PLANT PROTECTION.

Fundamentals of insecticidal action, natural factors governing insect abundance and activity, infection and disease development, chemical control, cultural practices, quarantine and eradication, host resistance and pathogen variability and weed control. Offered only at the Waltham Field Station.

#### 770. RESEARCH METHODS.

An orientation course for incoming graduate students. Stresses research principles, methods of analysis, including the use of analytical laboratory equipment, and presentation of results. *Credit, 1.*

#### 790. SEMINAR.

Reports on the current literature of entomology; special reports by resident and visiting speakers. Participation by all graduate students is expected. One class hour.

#### 823. ADVANCED BIOLOGICAL CONTROL.

The basic principles and practical application of biological control of insects. A section devoted to control of pest weeds with insects.

Prerequisite, Ent 680 or equivalent.

#### 842. ADVANCED ARTHROPOD TAXONOMY.

Classification of selected insects and insect allies, including latest methods in taxonomy and principles of classification. Prerequisite, permission of instructor. *Credit, 1-9.*

#### A. Immature stages of insects.

#### B. Minor order of insects.

Mr. Hanson.

#### C. Arthropods other than insects.

Mr. Hanson.

#### D. Other groups of insects.

#### 848. PRINCIPLES OF SYSTEMATIC ENTOMOLOGY.

The species concept; type categories; the Zoological Code. The preparation of a taxonomic paper of publication quality, including drawing, required.

Prerequisites, Ent 655.

Mr. Hanson.

#### 850. ADVANCED MEDICAL ENTOMOLOGY.

Detailed studies of insects as parasites of man and animals. Biology, vector-relationship, taxonomy, and control. Prerequisite, Ent 674 or equivalent.

#### 800. MASTER'S THESIS.

*Credit, 10.*

#### 900. DOCTORAL DISSERTATION.

*Credit, 18.*

## UNIVERSITY OF MASSACHUSETTS

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

#### 572. FOREST AND SHADE TREE INSECTS.

The ecology, biology and control of insects which attack shade trees, forests and forest products. A brief introduction to insects; special attention to the more important forest and shade tree insects.

Two class hours, two 2-hour laboratory periods.

*Credit, 4* Mr. Barbosa.

#### 579A. B. ANIMAL ECOLOGY.

Basic principles and concepts operative at the various levels of biological organization (organismic, population, community, and ecosystem). Topics covered: ecology and natural selection, behavioral ecology, human ecology, and current ecological problems such as pollution, overpopulation, etc. An optional 3-hour, 1-credit laboratory for an independent ecology research project.

*Credit, 3 (or 4).*

#### 595. EVOLUTION.

The course and dynamics of both inorganic and organic evolution; the implications of evolutionary concept on human philosophy, behavior, and welfare.

Mr. Hanson.

#### 611A. B. INSECT BEHAVIOR.

The specific behaviors of insects, analyzed in view of current experimental research, and used to demonstrate various neurobiological principles. An optional 3-hour, 1-credit lab for an independent research project. Lab period also includes several formal sessions.

*Credit, 3 (or 4).* Mr. Stoffolano.

#### 655 (I). CLASSIFICATION OF INSECTS.

A brief treatment of insect anatomy and principles of classification; identification of specimens (mostly adult) in some of the major groups of insects.

Three 2-hour laboratory periods.

Prerequisite, permission of instructor; Ent 126 desirable.

Mr. Hanson.

#### 657. INSECT MORPHOLOGY.

The external and internal anatomy of the major orders, with stress on phylogenetic relationships, as background for subsequent work in taxonomy and physiology of insects.

One class hour, three 2-hour laboratory periods.

Prerequisite, permission of instructor; Ent 126 desirable.

*Credit, 4* Mr. Hanson.

#### 674. MEDICAL AND VETERINARY ENTOMOLOGY.

Relationships of insects and their allies to the health of man and animals. The classification, biology, and control of these pests.

One class hour, two 2-hour laboratory periods.

Prerequisite, Ent 126 or permission of instructor.

#### 680. INSECT CONTROL.

The science of pest control. Biological control, and the need, economics, effectiveness, and hazards from insecticides are emphasized.

Prerequisite, Ent 126; Ent 579 and 682 desirable.

#### 681. INSECT PEST MANAGEMENT.

Application of the principles of insect pest management with emphasis on pest recognition, properties of available control agents and their correct use in planning control programs.

Prerequisite, Ent 680 and 126, or permission of instructor.

#### 682. INSECT PHYSIOLOGY.

Detailed consideration of the organ systems, showing their functions in nutrition, reproduction, respiration, and growth, and the relationship of physiology to behavior.

One class hour, two 2-hour laboratory periods.

Prerequisites, Ent 126, Biochem 520 and 521.

Mr. Hagedorn.

### COURSE NOT FOR MAJOR CREDIT

(No graduate credit for students majoring in Entomology)

## ENVIRONMENTAL ENGINEERING

### 560. FOOD AND STRUCTURAL PESTS.

Biology, recognition, damage, and principles of control relating to those insects and other pests which damage foods, fabrics, and buildings. A prior course in zoology or entomology desirable.

## Environmental Engineering

### GRADUATE FACULTY

(see under Civil and Chemical Engineering and Public Health for degrees, institutions, and years.)

DONALD DEAN ADRIAN, *Professor of Civil Engineering and Director of the Environmental Engineering Program.*

WILLIAM A. NASH, *Professor of Civil Engineering and Graduate Program Director.*

BERNARD B. BERGER, *Professor of Civil Engineering and Public Health and Director of Water Resources Research Center.*

JOSEPH M. COLONELL, *Professor of Civil Engineering.*

FRANCIS A. DIGIANO, *Associate Professor of Civil Engineering.*

SALVATORE R. DINARDI, *Associate Professor of Public Health.*

TSUAN H. FENG, *Professor of Civil Engineering and Agricultural Engineering.*

E. ERNEST LINDSEY, *Professor of Chemical Engineering.*

HOWARD A. PETERS, *Associate Professor of Public Health and Civil Engineering.*

The Environmental Engineering Program offers both M.S. and Ph.D. degrees. The overall objective of the Program is to prepare students for careers in engineering related to development of a better environment. This requires an understanding of water, air, and solid-waste treatment and disposal inasmuch as the processing of waste in one medium usually results in transfer of a by-product to one or both of the other media. Accordingly, the Environmental Engineering Master of Science curriculum requires each student to take a common core of fundamentals in the three media, while allowing him to pursue a subsequent speciality, in consultation with his adviser and in keeping with his career goals. The Ph.D. program has considerable flexibility to accommodate students who have been trained in various related or unrelated disciplines.

### REQUIREMENTS FOR THE MASTER'S DEGREE

#### 1. The Environmental Engineering Core.

Courses in the Core are intended to provide students from many different backgrounds with a technical foundation for more advanced environmental engi-



## ENVIRONMENTAL SCIENCES

neering courses, as well as an understanding of the institutions and policies common to control of water and air quality and land usage. The core consists of the following:

Civil Engineering 665, 670, 850, 851, and one environmental engineering laboratory course (CE 672, 673, 770, 773, 776). Total Core Credits, 11.

2. At least three courses listed in the Areas of Specialization.

Beyond the Core, environmental engineering elective courses have been conveniently grouped into three descriptive areas — systems, design, and science — each of which includes offerings in water, air and land resources. These are listed below:

Systems: CE 660, 662, 675, 764, 775, and Agricultural and Food Economics 582.

Design: CE 671, 676, 770, 771, 772, 774, Chemical Engineering 660, and Mechanical and Aerospace Engineering 577.

Science: CE 575, 672, 673, 674, 773, 776, and Public Health 632.

3. Thesis (six credits) or Master's Project (three credits).

4. Additional graduate credit courses which intensify a student's professional career goals. These are available in the fields of Engineering, Chemistry, Computer Science, Geology, Marine Science, Microbiology, Public Health, Statistics, Regional Planning, and Zoology. For example, rather than electing the more traditional environmental engineering program of study, a student may elect one reflecting an interest in environmental management by taking nine credits in Regional Planning and/or Economics.

5. Although the program is administered by the Department of Civil Engineering, individuals with a baccalaureate from accredited institutions in fields other than Civil Engineering are encouraged to apply.

All candidates from other than ECPD accredited engineering programs must take a sufficient number and distribution of courses such that the combination of their undergraduate and graduate courses will meet the Advanced Level Accreditation requirements of the Engineers Council for Professional Development. This may extend the non-engineering candidate's residency by one to three semesters.

6. All general Graduate School requirements for admission and for the degree must be met. A total of 31 credits must be earned.

## REQUIREMENTS FOR THE PH.D. DEGREE

1. Forty-eight credits of approved graduate-level course work beyond the bachelor's degree, of which two minor areas provide a minimum of 18 credits. Suitable minor areas include:

- Chemical, Biological, or Physical Science.
- Mathematics, Computer Science or Statistics.
- Chemical Engineering or Agricultural Engineering.
- Systems analysis, which may include courses offered in Industrial, Chemical, Electrical, and Mechanical Engineering.
- Public Health or Environmental Science.
- Economics, Planning, and Management.

2. There is no specific language requirement other than that which may be determined by the student's Guidance Committee. In certain cases the Guidance Committee might specify that the student's research objective might necessitate some knowledge of a lan-

guage; in other cases, course work from other schools or departments on the campus might be appropriate.

## Environmental Sciences

(Not a degree-granting program)

## GRADUATE FACULTY

WARREN LITSKY, *Commonwealth Professor and Chairman of the Department of Environmental Sciences*, B.S., Clark, 1945; M.S., Massachusetts, 1948; Ph.D., Michigan State, 1951.

HAIM B. GUNNER, *Professor and Graduate Program Director*, B.Sc., University of Toronto, 1946; M.Sc., University of Manitoba, 1948; Ph.D., Cornell, 1962.

ROBERT A. COLER, *Associate Professor*, B.A., State University of New York, 1952; M.A., 1954; Ph.D., Syracuse, 1960.

KARL DEUBERT, *Associate Professor*, Ph.D., Martin Luther University, Halle-Wittenberg, Germany, 1954.

LINDA G. LOCKWOOD, *Associate Professor*, B.S., Columbia, 1960; M.A., 1961; M.A., 1965; Ph.D., 1969.

JOHN T. REYNOLDS, *Adjunct Professor* (Professor of Biology, Clark University).

ROBERT W. WALKER, *Associate Professor*, B.S., Massachusetts, 1955; M.S., 1959; Ph.D., Michigan State, 1963.

The Department of Environmental Sciences, while offering the courses listed below, attempts to structure course sequences which are suited to the needs of individual students. As such, it encourages interaction with other departments offering related material in environmental studies. While this is not an independent degree-granting program, the M.S. and Ph.D. are offered through the Department of Plant and Soil Sciences and the M.Ed. and the Ed.D. in Environmental Sciences Education are awarded through the School of Education.

## ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

## COURSES OPEN TO GRADUATE STUDENTS ONLY

### 710, 711. GRADUATE SEMINAR IN ENVIRONMENTAL STUDIES.

Reading reports and discussions of the current literature in the area of Environmental Sciences. *Maximum credit, 6.*

### 745. MICROBIAL ECOLOGY OF THE SOIL.

The biochemistry and physiology of interactions among microorganisms in the soil environment, and their relationships with the soil environment. Lectures, discussions, and a critical review of current literature.

Prerequisite, Plant and Soil Sci 615 or permission of instructor. Mr. Gunner.

## COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

### 501. INTRODUCTORY ENVIRONMENTAL BIOLOGY.

The response of the biota to environmental stress induced by air, water, and soil pollutants.

Prerequisites, Botany 101, Zool 101, or equivalent. Three class hours, demonstrations, field trips. Mr. Gunner.

## UNIVERSITY OF MASSACHUSETTS

### 550. MICROBIAL ECOLOGY OF MARINE ENVIRONMENT.

The ecology, function, and importance of microorganisms in the marine environment including the underlying sediments, their role in the food chain and productivity of the seas and estuaries, and the factors influencing seasonal and geographical population dynamics. *Credit, 2.* Mr. Litsky.

### 602. ADVANCED POLLUTION BIOLOGY.

The measurement and evaluation of the biotic response to environmental stress of the terrestrial and aquatic biocoenoses induced by air, water and soil pollutants. *Prerequisites:* Introductory Environmental Biology or equivalent, 1 year of Introductory Chem and Zool or Botany. Two 1-hour lectures, two 3-hour laboratory, field trips, demonstrations. *Credit, 4.* Mr. Coler.

### 603. AIR POLLUTION BIOLOGY.

The biological input used for the determination of air quality criteria, including organism/environment interaction and dose/response phenomena in adapted and stressed systems. No laboratory.

### 604. RIVER POLLUTION-BIOLOGICAL SURVEY METHODS.

The chemical, physical and biological assessment of riverine ecosystems. Students conduct field surveys and present data in a final report form. *Permission of instructor required.* Mr. Coler.

### 615. MICROBIOLOGY OF THE SOIL.

Soil microorganisms; their distribution, ecology, and transformation of organic and inorganic substrates. Microbiology of the rhizosphere and the biological equilibrium. *Prerequisite:* Microbiol 250 or permission of instructor. Mr. Gunner.

### 700. SPECIAL PROBLEMS

Individual work on an assigned problem or project in the field of environmental sciences. *Credit, 1-3.*

(Master's Thesis and Doctoral Dissertation credits can be earned through the Plant and Soil Sciences Department and through the School of Education.)

## Exercise Science

### GRADUATE FACULTY

DEE W. EDINGTON, *Associate Professor, Head of the Department of Exercise Science, and Graduate Program Director*, B.S., Michigan State, 1959; M.S., Florida State, 1963; Ph.D., Michigan State, 1968.

DAVID C. BISCHOFF, *Professor of Physical Education, Associate Provost, and Dean of the School of Physical Education*, B.S., Pennsylvania State, 1952; M.Ed., North Carolina, 1953; Ph.D., Pennsylvania State, 1955.

HARRY K. CAMPNEY, JR., *Professor*, B.S., Pittsburgh, 1952; M.S., Illinois 1953; Ph.D., Iowa, 1960.

ROBERT J. JAMES, *Associate Professor*, B.S., Springfield College, 1954; M.S., 1957; B.S., Connecticut, 1964; Ph.D., Wisconsin, 1974.

WALTER P. KROLL, *Professor*, B.S., Northern Illinois, 1952; M.S., Illinois, 1953; P.E.D., Indiana, 1959.

THOMAS C. MCBRIDE, *Adjunct Professor*, A.B., Dartmouth, 1953; M.D., Vermont Medical School, 1957.

STANLEY PLAGENHOEF, *Professor*, B.S., Michigan 1949; M.S., 1951; Ph.D. 1962.

BENJAMIN RICCI, JR., *Professor*, B.S., Springfield College, 1949; M.Ed., 1950; D.P.E., 1958.

## EXERCISE SCIENCE

The Department of Exercise Science (motor integration, biomechanics, exercise biochemistry, exercise physiology, and sensorimotor dysfunction) offers programs of study leading to a Master of Science degree in Physical Education and a Doctor of Philosophy degree in Human Movement. The degree programs in Exercise Science prepares a candidate to study and apply exercise from a multidisciplinary approach.

Candidates for the M.S. and Ph.D. degrees are accepted for admission under the general regulations of the Graduate School. In addition, M.S. candidates are required to have completed courses in exercise physiology, human anatomy and kinesiology. Ph.D. candidates are required to have had two semesters of organic chemistry, a year of physics, a semester of statistics and computer programming, as well as exercise physiology, anatomy and kinesiology. Remedial work may be taken during the first year of study.

The degree requirements include 31 graduate credits for the M.S. degree and approximately 90 graduate credits for the Ph.D. degree. In both degree programs the majority of these credits are earned in exercise science courses. The credits earned in the department come from both required and elective courses in both degree programs.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

### 700. SPECIAL PROBLEMS

Individual research on topics of a special interest. *Prerequisite:* permission of instructor. *Credit, 1-6.*

### 711. INTRODUCTION TO RESEARCH IN HUMAN MOVEMENT.

The nature of research; methods of acquiring knowledge; research and social progress; general concepts concerning the scientific method. *Credit, 1.* Mr. Kroll.

### 712. DATA ANALYSIS AND INTERPRETATION IN HUMAN MOVEMENT RESEARCH

Theory and techniques involved in the analysis and interpretation of data pertinent to research in human movement. Parametric and nonparametric inference statistics. *Prerequisite:* Stat 121. Mr. Campney.

### 722. EXERCISE-PHYSIOLOGY INSTRUMENTATION THEORY.

Instrumentation theory relative to the equipment utilized in estimating parameters in exercise physiology. *Prerequisites:* Zool 135, Ex Sci 278 and 621. Mr. Ricci.

### 732. BIOMECHANICS

Physical and biological considerations applied to the teaching of motor skills. *Prerequisites:* Ex Sci 204, 205, and 631. Mr. Plagenhoef.

### 742. MOTOR INTEGRATION PRACTICUM

Theory and practice in laboratory analysis. Topics include nerve conduction, velocity, reflex latency, reaction time, and electromyographic analysis of local muscular fatigue as related to skilled and unskilled performance. *Prerequisites:* Ex Sci 204, 205, 278, 641, Zool 135. Mr. Kroll.

### 813. MEASUREMENT THEORY AND HUMAN MOVEMENT RESEARCH.

The theory of the construction of evaluative instruments in human movement. Emphasis on a critical examination of existing measurement devices. *Prerequisites:* Ex Sci 274 and 712. Mr. Campney.

## FOOD AND AGRICULTURAL ENGINEERING

823. **EXPERIMENTAL PHYSIOLOGY OF EXERCISE.**  
Experimental investigation of the physiological effects of exercise.  
Prerequisite, Ex Sci 621. Mr. Ricci.

824. **TISSUE RESPIRATORY RESPONSES TO EXERCISE.**  
Tissue respiration in response to stress conditions. Emphasis on oxidative energy production.  
Prerequisite, Ex Sci 278. Mr. Edington.

825. **EXERCISE METABOLISM.**  
The factors affecting human metabolism under exercise conditions. Emphasis on energy production and fiber types.  
Prerequisite, Ex Sci 278. Mr. Edington.

833. **FORCES AND MOMENTS OF FORCE IN HUMAN MOTION.**  
The analysis of whole body muscle action during movement and impact.  
Prerequisite, Ex Sci 732. Mr. Plagenhoef.

843. **NEUROMUSCULAR FATIGUE.**  
Analysis of fatigue and recovery processes in gross human motor activity.  
Prerequisites, Ex Sci 621, 742, 813, and Stat 561. Mr. Kroll.

844. **KINESTHESIA.**  
Anatomical and functional analysis of the kinesthetic phenomena in gross human motor activity.  
Prerequisites, Ex Sci 641, Psych 511, and Stat 581. Mr. Kroll.

899. **SEMINAR IN HUMAN MOVEMENT.**  
Topics in human movement not covered in other courses.  
*Credit, 1 per semester; Maximum credit, 6.*

800. **MASTER'S THESIS.** *Credit, 3-6.*

900. **DOCTORAL DISSERTATION.** *Credit, 18.*

**COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS**  
(For either major or minor credit)

621. **PHYSIOLOGICAL BASIS OF HUMAN PERFORMANCE.**  
Analysis and interpretation of cardiovascular-pulmonary adjustment, metabolic requirement, and heat regulation during exercise.  
Prerequisite, Ex Sci 278. Mr. Ricci.

631. **MECHANICAL ANALYSIS OF HUMAN MOTION.**  
Application of the principles of mechanics to the analysis of human motion.  
Prerequisites, Ex Sci 204 and 205. Mr. Plagenhoef.

641. **MOTOR INTEGRATION.**  
The control of muscular activity by the nervous system. Topics include basic motor-system reflexes, cross transfer, fatigue, kinesthetic sense, lateral dominance, and neuromuscular facilitation techniques.  
Prerequisites, Ex Sci 204, 205, 278, and Zool 135. Mr. Kroll.

651. **THEORY OF THERAPEUTIC EXERCISE.**  
Theory of therapeutic exercise for the mentally retarded, physically handicapped, and normal.  
Prerequisite, Ex Sci 259. Mr. James.

652. **PHYSICAL ACTIVITY AND MENTAL RETARDATION.**  
Physical activity relative to the behavior of the mentally retarded.  
Prerequisite, Ex Sci 259. Mr. James.

## GRADUATE SCHOOL

### Food and Agricultural Engineering

#### GRADUATE FACULTY

JOE T. CLAYTON, *Professor, Head of the Department of Food and Agricultural Engineering, and Graduate Program Director, B.S.A.E., Tennessee, 1949; M.S., Illinois, 1951; Ph.D., Cornell, 1962.*

TSUAN H. FENG, *Professor of Civil Engineering.*

CURTIS A. JOHNSON, *Associate Professor, B.S.A.E., Nebraska, 1940; M.S., Iowa State, 1955.*

ERNEST A. JOHNSON, *Associate Professor, B.S., Massachusetts, 1953; M.S., Purdue, 1959.*

ROBERT G. LIGHT, *Professor, B.S., Maine, 1953; M.S., Pennsylvania State, 1958.*

RICHARD E. MUDGETT, *Associate Professor, B.S.E.E., Northeastern, 1952; B.B.A., 1954; M.S. Massachusetts, 1969; Ph.D., 1974, Massachusetts Institute of Technology.*

JOHN S. NORTON, *Associate Professor, B.S., Pennsylvania State, 1948; M.S., Louisiana State, 1950.*

MICHA PELEG, *Assistant Professor, B.Sc., The Technion, Israel, 1963; M.Sc., 1967; D.Sc., 1971.*

CHOKYUN RHA, *Adjunct Associate Professor, B.S., Massachusetts Institute of Technology, 1962; M.S., 1964; M.S.Ch.E., 1966; Ph.D., 1967.*

JOHN R. ROSENAU, *Associate Professor, B.S.A., Wisconsin, 1965; B.S.M.E., 1966; Ph.D., Michigan State, 1970.*

HENRY G. SCHWARTZBERG, *Professor, B.Ch.E., Cooper Union, 1949; M.Ch.E., New York University, 1959; Ph.D., 1966.*

LESTER F. WHITNEY, *Associate Professor, B.S., Maine, 1949; M.S., Michigan State, 1951; Ph.D., 1963.*

Master of Science and Doctor of Philosophy programs in Food and Agricultural Engineering involve studies of the engineering aspects of the production, preservation, storage, processing, and distribution of food. Academic backgrounds, as well as programs of study, may differ markedly depending upon the aims of the student and the area of emphasis he or she selects. Students working in any emphasis-area must have a background in the physical and engineering sciences and have, or be prepared to acquire, a basic knowledge of the biological sciences.

Requirements for both the M.S. and Ph.D. degrees include courses offered by the Department of Food and Agricultural Engineering and courses in supporting areas, such as food science, mechanical, chemical, and civil engineering; mathematics; and the biological and microbiological sciences. A typical Ph.D. program includes approximately one-third major department offerings, one-third course work in supporting areas, and one-third dissertation. The department imposes no foreign language requirements for the doctoral degree.



## UNIVERSITY OF MASSACHUSETTS

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

##### 700. SPECIAL PROBLEMS IN FOOD AND AGRICULTURAL ENGINEERING.

Current topics pertinent to students' interests and departmental goals. Includes analysis, experimentation, and/or literature review. The special problem culminates with an unbound written report, often of publishable quality.

*Credit, 1-6.*

##### 740. PHYSICAL PROPERTIES OF BIOLOGICAL MATERIALS.

The physical characteristics and mechanical, rheological, thermal, electrical, and optical properties of biological materials. Emphasis on the application of fundamental concepts of behavior in storage, processing, quality-evaluation and manipulation.

2 class hours, one 2-hour laboratory period.

Prerequisite, permission of instructor.

##### 756. ENGINEERING ANALYSIS OF BIOLOGICAL SYSTEMS.

Methods of mathematical modeling as a supplement to laboratory experiments. Analysis of biological problems in an engineering context, and the physical and mathematical interpretation of the results.

Prerequisite, Math 585 or approval of department.

##### 760. PHYSICAL AND PHYSIOLOGICAL RELATIONSHIPS IN ANIMAL ENVIRONMENTS.

(In cooperation with Department of Veterinary and Animal Sciences.) Functional environment contrasted to the generalized environment. The action of the environment on the animal and the reaction of the animal on the environment in terms of several parameters.

Prerequisite, permission of instructor.

##### 766. CONTROL OF HEAT AND VAPOR FLOW IN BUILDINGS AND PROCESSES

Application of mass flow theory to heat and vapor transfer. Thermal and gaseous interchange between animals and biological products and their environments. The application of instruments and controls.

Prerequisite, Mech Eng 582 or equivalent.

##### 776. ADVANCED FOOD-MACHINERY DESIGN.

Food machinery component design problems. The interrelation of the physical properties of biological material, with problems related to the food industry. A design problem is required of each student.

Prerequisite, permission of the department, or Mech Eng 283 and Math 285 or equivalents.

##### 780. BIOPHYSICS IN AGRICULTURAL ENGINEERING.

Properties of living systems in terms of the concepts of physics and engineering; the biophysical concept of the living cell; the theory of controlling regimes and biological rate processes.

Prerequisite, Food and Ag Eng 781

*Credit, 4*

##### 781. BIOLOGICAL PROCESS ENGINEERING.

Engineering analyses of thermal processing, ionizing radiation processing, microwave processing, other physical and chemical sterilization processes, and combined process sterilization.

Prerequisite, Food and Ag Eng 681.

##### 786. ADVANCED PROCESS ENGINEERING.

Engineering analyses of fermentation, recovery processes, enzyme technology, membrane technology, waste processing and utilization.

##### 791. SEMINAR.

Research methods in Food and Agricultural Engineering.

*Credit, 1.*

## FOOD AND RESOURCE ECONOMICS

##### 792. SEMINAR.

Research accomplishments in Food and Agricultural Engineering.

*Credit, 1.*

##### 891. PROFESSIONAL TOPICS IN FOOD AND AGRICULTURAL ENGINEERING

*Credit, 1 each semester. Maximum credit, 2*

##### 892. TECHNICAL TOPICS IN FOOD AND AGRICULTURAL ENGINEERING.

*Credit, 1 each semester. Maximum credit, 2.*

##### 800. MASTER'S THESIS.

*Credit, 4-8.*

##### 900. DOCTORAL DISSERTATION.

*Credit, 18.*

#### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

##### 555. AQUACULTURAL ENGINEERING SYSTEMS (OE 591).

Rate theory and similitude in the scale-up of biological processes. Case study of biological data used in the derivation of useful engineering systems design relationships for the culture of mollusks.

##### 631. INSTRUMENTATION IN FOOD AND AGRICULTURAL ENGINEERING.

Instrumentation applied to research, covering recorders, indicators, controllers and transducers in general. Emphasis on applications and limitations.

Prerequisite, permission of instructor.

##### 665. PHYSIOLOGICAL UNIT OPERATIONS

Introduction to physiological systems, studies of thermodynamics, fluid dynamics, heat transfer and mass transfer to biological systems, concepts in biological regulatory systems and biological engineering design with specific examples.

##### 675. FOOD PROCESSING SYSTEMS ANALYSIS.

Continuous and batch processing systems for food and biological products. Flow analysis; systems analysis, scale-up, and simulation techniques. Machine operating principles, sanitary requirements, fabrication limitation and machine interactions.

Prerequisite, permission of instructor.

##### 681. ELEMENTS OF FOOD UNIT OPERATIONS

The fundamental engineering principles involved in the processing of biological materials. Emphasis on heat transfer, mass and energy balances, refrigeration, psychrometry, properties of fluids and fluid flow.

##### 684. APPLICATIONS OF FOOD ENGINEERING.

Application of engineering concepts to the processing and handling of biological materials, including evaporation, dehydration, irradiation, freeze drying, cost analysis, materials handling, manual motion, economy, and packaging.

## Food and Resource Economics

#### GRADUATE FACULTY

N. EUGENE ENGEL, *Professor and Head of the Department of Food and Resource Economics*, B.S., Nebraska, 1954; M.S., Connecticut, 1959; Ph.D. 1967.

JON M. CONRAD, *Assistant Professor and Graduate Program Director*, B.S., Wisconsin, 1968; M.A., Washington, 1970; Ph.D., Wisconsin, 1973.

P. GEOFFREY ALLEN, *Visiting Assistant Professor*, B.Sc., Nottingham, 1967; M.S., California, 1969; Ph.D., 1972

ROBERT S. BOND, *Professor of Forestry*

## FOOD AND RESOURCE ECONOMICS

ROBERT L. CHRISTENSEN, *Professor*, B.S., Michigan State, 1958; M.S., Delaware, 1960; Ph.D., North Carolina State, 1967.

BRADFORD D. CROSSMON, *Professor*, B.S., Connecticut, 1937; M.S., 1943; M.P.A., Harvard, 1949; D.P.A., 1963.

BARRY C. FIELD, *Assistant Professor*, B.S., Cornell, 1956; M.S., 1959; Ph.D., California, 1967.

JOHN H. FOSTER, *Professor*, B.S., Cornell, 1950; M.S., Purdue, 1951; Ph.D., Cornell, 1957.

ELMAR JARVESOO, *Professor*, M.S., Tartu University, Estonia, 1937; Dr. Agri. Science, University of Berlin, 1939.

EDWARD K. KNAPP, *Associate Professor*, B.S., Cornell, 1950; M.S. (Ed.), 1951; Ph.D., Michigan State, 1969.

THEODORE W. LEED, *Professor*, B.S., Ohio State, 1950; M.S., 1951; Ph.D., 1957.

DONALD R. MARION, *Associate Professor*, B.S., Cornell, 1954; M.S., 1955; Ph.D., Massachusetts, 1971.

GEORGE R. MCDOWELL, *Assistant Professor*, B.S., Rhode Island, 1961; M.S., Cornell, 1963; Ph.D., Michigan State, 1975.

BRIAN R. PAYNE, *Adjunct Assistant Professor of Forestry and Adjunct Assistant Professor of Agricultural and Food Economics*.

DAVID A. STOREY, *Professor*, B.S., Massachusetts, 1954; M.S., Purdue, 1958; Ph.D., 1960.

CLEVE E. WILLIS, *Associate Professor*, B.A., Chico State, 1965; M.S., California, 1967; Ph.D., 1972.

The Department offers both the Ph.D. and the M.S. degrees. The primary objective of the graduate program in Food and Resource Economics is the education of applied economists to meet the needs of contemporary society in the United States and other countries. Fields of interest included in the Department's program are: 1) Natural Resource and Environmental Economics, 2) International Agricultural Development Economics, and 3) Food Production and Marketing Economics.

The doctoral degree requirements of the Graduate School apply to the Ph.D. program. The student's program of study will be developed in accordance with his or her individual objectives and the required level of competence in economic theory and quantitative analytical methods established by the Department. The Ph.D. student is required to demonstrate research competency by completing an acceptable Ph.D. dissertation. No foreign language competency is required.

The general requirements established by the Graduate School also apply to the M.S. degree program. The M.S. degree candidate will earn from 6 to 9 credits in "experience activities" which include the alternatives of a 9-credit thesis or a 6- to 9-credit special problem in research, teaching, extension, or administration. No foreign language competency is required. A written qualifying examination normally is taken after the student completes the coursework.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

## GRADUATE SCHOOL

### 700. PROBLEMS IN AGRICULTURAL, FOOD, AND RESOURCE ECONOMICS.

Independent study and research on selected problems in agricultural, food, and resource economics. *Credit, 1-9.*

### 702. AGRICULTURE, NATURAL RESOURCES AND THE NATIONAL ECONOMY.

Application of welfare economics to the analysis of agricultural and other natural resources policies, the use of economic models for resources planning, and consideration of the environmental implications of agricultural and other resources programs. *Mr. Field.*

### 704. ADVANCED ANALYSIS OF FOOD MARKETING SYSTEMS.

Conceptual and normative analysis at both micro- and macro-levels of food and commodity marketing systems. Firm and group behavior, market structure, public policy implications.

### 705. RESEARCH METHODS IN AGRICULTURAL, FOOD, AND RESOURCE ECONOMICS.

Scientific method and its application. Selection, planning, and conduct of research. Formulation of models and hypotheses. Interdisciplinary considerations. Techniques commonly used and promising new approaches. Research administration.

### 721. NATURAL RESOURCE DEVELOPMENT ECONOMICS.

Economic models of natural resources use with emphasis on exhaustible resources; analysis of the role of natural resources in aggregate economic performance; dynamic characteristics of natural resources programs.

### 740. QUANTITATIVE METHODS.

Applications of micro-econometric techniques in agricultural, food, and resource economics. Emphasis on practical applications of modern methods of quantitative analysis to problems of the firm. Linear programming, transportation frameworks, and network flows. *Mr. Willis.*

### 741. ECONOMETRIC METHODS.

Introduction to econometric methods: the general linear model, nonspherical properties, generalized least squares, and estimation of systems of equations. *Mr. Willis.*

### 742. SPECIAL TOPICS IN ECONOMETRICS AND QUANTITATIVE ANALYSIS.

Seminars in non-linear and integer programming, statistical decision theory, recursive systems and causal ordering, dynamic econometric models, and other current topics. *Mr. Willis.*

### 775. ADVANCED AGRICULTURAL AND FOOD ECONOMICS.

Intensive study of the theory of the firm as it applies to agricultural and food production, including: production functions, costs functions, programming, and decision-making principles. *Mr. Conrad.*

### 799. SEMINAR.

*Credit, 1-3.*

### 800. MASTER'S THESIS.

*Credit, 3-9.*

### 900. DOCTORAL DISSERTATION.

*Credit, 18.*

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

### 535. AGRICULTURAL BUSINESS MANAGEMENT.

Basic decision-making principles, management tools, analytical methods and their application to management problems of commercial farms and other agricultural firms. *Mr. Lee.*

### 546. ADVANCED MANAGEMENT OF AGRICULTURAL FIRMS.

Application of the theory of the firm and modern decision theory to management of typical agricultural businesses.

## UNIVERSITY OF MASSACHUSETTS

Plans for alternative firm adjustments analyzed, using budgeting and other methods. Mr. Crossmon.

### 561. FOOD MARKETING SYSTEMS.

Structure of food marketing systems. Operating principles, significant product characteristics, role of specialized marketing firms, government programs and policies.

Mr. Fitzpatrick.

### 646. REGIONAL COMPETITION AND MARKET INTERDEPENDENCY.

Interregional competition and interdependency in agricultural factor and product markets, in the context of aggregate demand and supply by regions as affected by spatial considerations.

Mr. Christensen.

### 652. AGRICULTURAL POLICY.

Analysis of U. S. public policies relating to the food and fiber system and the rural sector. Domestic and international considerations. Emphasis on current issues.

Mr. Storey.

### 667. FOOD MERCHANDISING.

Principles of merchandising food products; consumer demand for food; developing a competitive strategy including product line pricing, and retail merchandising decisions; current issues in food merchandising.

Mr. Leed.

### 668. FOOD DISTRIBUTION ECONOMICS.

Economic analysis of factors, internal and external to the firm, influencing sales of food firms. Emphasis on consumer concerns, public policy, and legislation in food marketing.

Mr. Marion.

### 670. WATER QUALITY ECONOMICS.

Principles for selection of welfare maximizing plans from among alternative pollution control policies and measures. Market and administrative decision making processes for pollution control.

Mr. Conrad.

### 673. RESOURCE AND CONSERVATION ECONOMICS.

An introduction to economic and institutional factors controlling land and water use. Land values, the nature of private property, social control of land use, and conservation economics.

### 676. MARINE RESOURCE ECONOMICS.

Economic analysis applied to public and private decisions about the utilization of coastal and offshore marine resources. Emphasis on current issues.

Mr. Storey.

### 681. INTERNATIONAL AGRICULTURAL DEVELOPMENT.

Economic development of low income rural economies. Relation of agriculture to national economies. Exogenous and endogenous factors in agricultural development.

Mr. Foster.

## Food Science and Nutrition

### GRADUATE FACULTY

FREDERICK J. FRANCIS, *Professor and Head of the Department of Food Science and Nutrition*, B.A., Toronto, 1946; M.A., 1948; Ph.D. Massachusetts, 1954.

FRANK E. POTTER, *Professor and Graduate Program Director*, B.S., Maine, 1942; M.S., Maryland, 1948; Ph.D., Pennsylvania State, 1955.

VIRGINIA A. BEAL, *Associate Professor*, B.S., Simmons College, 1939, M.P.H., Harvard School of Public Health, 1945.

MARK H. BERT, *Associate Professor*, B.S., Lima University, Peru, 1939; M.S., Illinois, 1948; Ph.D., 1955.

## FOOD SCIENCE AND NUTRITION

ERNEST M. BUCK, *Professor*, B.S., Connecticut, 1955; M.S., North Carolina State, 1957; Ph.D., Massachusetts, 1966.

FERGUS M. CLYDESDALE, *Professor*, B.A., Toronto, 1960, M.S., 1962; Ph.D., Massachusetts, 1966.

DAVID A. EVANS, *Associate Professor*, B.S., Pennsylvania State, 1953, M.S., 1955; Ph.D., Massachusetts, 1965.

IRVING S. FAGERSON, *Professor*, B.S., Massachusetts Institute of Technology, 1942; M.S., Massachusetts, 1948; Ph.D., 1950.

KIRBY M. HAYES, *Professor*, B.S., Massachusetts, 1947, M.S., 1949.

HERBERT O. HULTIN, *Professor*, B.S., Massachusetts Institute of Technology, 1956; M.S., 1956, Ph.D., 1959.

WARD M. HUNTING, *Associate Professor*, B.S., Houghton College, 1947; M.S., Massachusetts, 1949, Ph.D., 1963.

CARRIE R. JOHNSON, *Assistant Professor*, B.S., Kansas State, 1951; M.S., Massachusetts, 1966, Ph.D., 1975.

ROBERT E. LEVIN, *Associate Professor*, B.S., Los Angeles State, 1952, M.S., Southern California, 1954, Ph.D., California, 1963.

WASSEF W. NAWAR, *Professor*, B.S., University of Cairo, 1947, M.S., 1950, Ph.D., Illinois, 1960.

PETER L. PELLETT, *Professor and Director of Nutrition Option*, B.S., Borough Polytechnic, London, 1952, Ph.D., London School of Hygiene and Tropical Medicine, 1956.

F. MILES SAWYER, *Associate Professor*, B.S., Massachusetts Institute of Technology, 1948, M.S., California, 1951, Ph.D., 1955.

WILLARD M. WEATHERHOLTZ, *Assistant Professor*, B.S., Berea College, 1963, M.S., Virginia Polytechnic, 1966, Ph.D., 1969.

### INSTITUTE OF AGRICULTURAL AND INDUSTRIAL MICROBIOLOGY

WARREN LITSKY, *Commonwealth Professor of Environmental Sciences and Director of Agricultural and Industrial Microbiology*, B.S., Clark, 1945; M.S., Massachusetts, 1948; Ph.D., Michigan State, 1951.

ROBERT A. COLER, *Assistant Professor*, B.A., State University of New York, 1952; M.A., 1954; Ph.D., Syracuse, 1960.

HAIM B. GUNNER, *Associate Professor*, B.S., University of Toronto, 1946; M.S., University of Manitoba, 1948; Ph.D., Cornell, 1962.

ROBERT W. WALKER, *Assistant Professor*, B.S., Massachusetts, 1955; M.S., 1959; Ph.D., Michigan State, 1963.

The department offers two options: food science, and nutrition. Industrial microbiology is offered as an area of concentration for the Ph.D. degree in the Department of Food Science and Nutrition in cooperation with the Institute of Agricultural and Industrial Microbiology.

### FOOD SCIENCE OPTION

Graduate students who wish to major in food science may not be admitted to candidacy for an advanced



## FOOD SCIENCE AND NUTRITION

## GRADUATE SCHOOL

degree until such time as the undergraduate requirements in basic sciences and department courses have been met substantially. Work in the area of dairy technology is included in the offerings of the Department of Food Science and Nutrition.

All general Graduate School requirements for admission and for the degree must be met with the following additional requirements:

1. All Ph.D. candidates will offer as a minimum, 15 credits of departmental 800-level courses, three credits of seminar, and nine credits outside the department in certain courses more advanced than those recommended for undergraduate majors.

2. Competency in computer usage and programming is required of all Ph.D. candidates.

3. The Department of Food Science and Nutrition requires no foreign language competency for the doctoral degree.

4. Candidates for the M.S. degree may select one of three options, in order to fulfill the Graduate School requirements.

a. M.S. degree with thesis. Ten credits may be allowed for the thesis.

b. M.S. degree with research problem. Up to six credits may be allowed for the problem.

c. M.S. degree with course credits only.

5. Candidates for the non-thesis M.S. degree in options b. and c. above must submit at least nine credits of departmental 800-courses and two credits of seminar. The non-thesis options b. and c. are not open to candidates holding a departmental research assistantship.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

##### 700. RESEARCH PROBLEM.

Mainly for candidates for the Master of Science degree who do not write a thesis. Original research expected. Two bound copies of a written report of the study are required by the Department. *Credit, 3-6.*

##### 701. RESEARCH PROJECT.

Research on problems not related to the thesis. *Credit, 1-4.*

##### 802. ADVANCED DAIRY CHEMISTRY.

The physical, colloidal and chemical properties of milk and dairy products. The role of milk fat, salts, proteins, carbohydrates and enzyme systems.

Prerequisite, permission of instructor. *Mr. Potter.*

##### 809. MICROBIOLOGY AND FOOD PROCESSING.

Relationships of yeasts, molds, and bacteria to foods. Microbiology of refrigerated foods, mycotoxins, pectic enzymes. Characteristics and properties of organisms causing food infections and poisonings.

Two class hours; one 3-hour laboratory period.

Prerequisites, basic biochemistry and microbiology.

*Mr. Levin.*

##### 810. THERMOBACTERIOLOGY AND FOOD PROCESSING.

Bacteria of importance in spoilage of canned foods. Bacterial contamination and its control. Thermal resistance of bacteria. Heat transfer in thermally processed foods. Calculation and evaluation of sterilization processes.

Prerequisites, FS&N 809 and calculus. *Mr. Stumbo.*

##### 816. FOOD PACKAGING.

Characteristics of packaging materials as related to food product requirements. Evaluation, testing and case studies of

current food packages and products. Field trips to selected food and packaging operations.

Two class hours, one 3-hour laboratory period.

Prerequisite, FS&N 661.

*Mr. Hayes.*

##### 821. LIPID CHEMISTRY.

Composition and chemical properties of edible fats and oils. Physical characteristics — plasticity, polymorphism, melting, solidification. Technology of industrial fats — extraction, refining, hydrogenation, inter-esterification. Deteriorative reactions — oxidation, thermal degradation. Biological significance. New methods of analysis. Review of current literature.

Two class hours, one 2-hour laboratory period.

Prerequisite, permission of instructor.

*Mr. Nawar.*

##### 830. FOOD BIOCHEMISTRY.

Effects of storage and processing procedures on factors such as cellular organization, membrane deterioration, post-mortem or post-harvest protein synthesis, and enzymic control in plant and animal tissues used as food.

*Mr. Hultin.*

##### 841. ADVANCED FOOD ANALYSIS.

Instrumental methods. Infrared spectrophotometry, mass spectrometry, gas and liquid chromatography. Theory, techniques and applications.

Two class hours, one 2-hour laboratory period.

Prerequisite, permission of instructor.

*Mr. Fagerson.*

##### 850. COLORIMETRY AND APPEARANCE.

Color theory encompassing the physics and psychophysics of color matching and measurement along with the physiology of vision. Development of color solids and scales. Interpretation of reflection and transmission data. Visual and instrumental characteristics of color and appearance.

Total of 20 lecture hours and 12 laboratory hours.

Prerequisite, permission of instructor. Not open to FS&N majors.

*Credit, 2. Mr. Francis, Mr. Clydesdale.*

Two class hours and one 3-hour laboratory.

The extra lectures and laboratory are devoted to color quality changes with emphasis on foods.

*Credit, 3.*

*Mr. Francis, Mr. Clydesdale.*

##### 860. PIGMENTS IN FOODS.

Chemistry, analysis and processing implications of the anthocyanins, flavonoids, chlorophylls, carotenoids, betacyanins, meat pigments and nonenzymatic browning systems. Heavily weighted on chemistry but also includes interpretations in terms of appearance, nutritive value and general quality. Complements FS&N 850.

Two class hours, one 3-hour laboratory period.

Prerequisite, permission of instructor.

*Mr. Clydesdale, Mr. Francis.*

##### 871 (I), 872 (II). SEMINAR.

Review of current literature and research. Visiting lecturers.

One class hour.

*Credit, 1.*

##### 895. TOXICOLOGY.

Evaluation of methods used to determine safety of economically important chemicals. Mechanisms of drug disposition and drug metabolism. Discussion of regulatory toxicology.

Prerequisite, permission of instructor. *Mr. Weatherholtz.*

##### 800. MASTER'S THESIS.

*Credit, 10.*

##### 900. DOCTORAL DISSERTATION.

*Credit, 18.*

#### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

##### 558. ANIMAL PRODUCTS.

Introduction to the processing, purchasing, handling and storage of meats and other protein foods.

Two class hours, one 2-hour lecture-demonstration.

*Mr. Hayes.*

## UNIVERSITY OF MASSACHUSETTS

### 611. FOOD AND INDUSTRIAL FERMENTATIONS.

The genetics of industrial microorganisms, dairy fermentations, microbial production of protein, pesticides, nucleotides, beer, wine, vinegar, antibiotics, ergotamine and amino acids.

Prerequisites, general microbiology and biochemistry.  
Two class hours. *Credit, 2.* Mr. Levin.

### 652. FOOD CHEMISTRY I.

The chemistry of food products. Chemical, physical, and biological changes in foods at the cellular and molecular levels during storage and processing. Emphasizes water, cell structure, carbohydrates and lipids of foods.

Prerequisite, Organic Chemistry or permission of instructor.  
Mr. Hultin.

### 653. FOOD CHEMISTRY II.

The chemistry of food products. Chemical, physical and biological changes in foods at the cellular and molecular levels during storage and processing. Emphasizes food proteins, enzymes, vitamins and flavor chemistry. May be taken separately from FS&N 652.

Prerequisite, Organic Chemistry or permission of instructor.  
Mr. Nawar.

### 661. FOOD PROCESSING.

Basic principles and current technology of food processing. Blanching, thermal processing, freezing, concentration, drying and packaging. *Mr. Bluestein.*

### 662. FOOD PROCESSING LABORATORY.

Application and utilization of pilot plant equipment to illustrate principles and practice in the food industry.  
One class hour; one 4-hour laboratory period.

*Mr. Bluestein.*

### 665. UNIT OPERATIONS.

Technical principles involved in the handling and processing of milk and dairy products.  
Two class hours, one 2-hour laboratory period.

*Mr. Hankinson.*

### 666. HYGIENIC PRINCIPLES OF FOOD HANDLING.

Application of hygienic principles to the preparation, processing and handling of foods. Emphasis on training supervisory personnel. *Mr. Evans.*

### 671. ANALYSIS OF FOOD PRODUCTS

Physical, chemical, microbiological and microscopical methods. Two class hours, one 4-hour laboratory period.  
Prerequisite, analytical chemistry. *Mr. Hunting.*

### 672. OBJECTIVE ANALYTICAL METHODS AND INSTRUMENTATION.

Continuance of 671.  
Two class hours, one 4-hour laboratory period.  
Prerequisite, FS&N 671. *Mr. Hunting.*

### 674. NUTRITIONAL ASPECTS OF FOOD PROCESSING.

Effects of traditional and new methods of food processing, chemical additives and naturally occurring toxicants on the nutritional quality of food. Nutritional labelling and legal aspects.

Prerequisites, FS&N 540 or permission of instructor.  
*Mr. Sawyer.*

### 680. SPECIAL TOPICS IN WORLD FOOD TECHNOLOGY.

Selected problems in applications of food technology to solutions of world food problems in developing countries.  
Two class hours, *Credit, 2.* *Mr. Esselen.*

### 684. SENSORY EVALUATION METHODS.

An introduction to sensory measurements in the evaluation and acceptance of foods. Panel tests and their statistical interpretation; taste, odor, color, and texture measurements.  
Two class hours, one 2-hour laboratory period. *Mr. Sawyer.*

### COURSES NOT FOR MAJOR CREDIT

(No graduate credit for students in Food Science Option)

## FOOD SCIENCE AND NUTRITION

### 551. INTRODUCTORY FOOD SCIENCE.

Food manufacture, processing, distribution and spoilage problems. *Mr. Hayes.*

### 575. SURVEY OF FOOD TECHNOLOGY.

An introduction to food science, its role in world food supply, and the relationships of raw materials, processing, and finished products. Consumer issues, regulatory problems, and nutritive quality.

Two class hours; one 2-hour laboratory period.  
*Mr. Esselen, Mr. Hayes.*

## NUTRITION OPTION

The degree of Master of Science or Doctor of Philosophy may be earned in the Department by candidates who hold an accredited baccalaureate degree in natural sciences with emphasis on chemistry or biology or an accredited baccalaureate in home economics with a major in dietetics or nutrition and food. Other students must be prepared to remedy undergraduate deficiencies without earning graduate credit.

Candidates must satisfy the M.S. or Ph.D. degree requirements established by the University. The program for each candidate for the M.S. degree is designed to meet the needs and interests of the student; it includes course work in the major field and in a minor area such as physiology, food science, biochemistry, public health or food economics and either a thesis or a written report on his work on a special problem.

The program for each candidate for the Ph.D. degree is designed with sufficient flexibility to meet the needs and interests of the student; it includes course work in the major field and in areas related to the major field, a written preliminary comprehensive examination and a dissertation. The Department requires no foreign language reading competency for the Ph.D. degree.

## ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

#### 700. SPECIAL PROBLEMS.

Prerequisite, permission of department head. *Credit, 3-6.*

#### 703. ADVANCED NUTRITION — CARBOHYDRATES, LIPIDS AND AMINO ACIDS.

Metabolic role of carbohydrates, lipids, proteins and amino acids; biological oxidations, mechanisms of energy production and utilization.

Prerequisite, Biochem 520 or permission of instructor.  
*Mr. Pellett, Mr. Weatherholtz.*

#### 704. ADVANCED NUTRITION — VITAMINS.

Metabolic role of vitamins, specific functions, requirements, sources, assay methods, effects of deficiencies and excesses.  
Prerequisite, FS&N 703 or permission of instructor.

*Mr. Pellett, Mr. Weatherholtz.*

#### 705. ADVANCED NUTRITION — MINERALS.

Metabolic role of minerals, specific functions, requirements, sources, assay methods, effects of deficiencies and excesses.  
Prerequisites, FS&N 703 or permission of instructor.

*Mr. Weatherholtz.*

#### 710. SEMINAR.

Readings, reports and discussions on the current literature in the area of Food or Nutrition.

*Credit, 1 per semester; maximum credit, 3.*

## FORESTRY AND WOOD TECHNOLOGY

### 800. MASTER'S THESIS.

Individual research.

Credit, 6-10.

### 801. RESEARCH PROJECT.

Prerequisite, permission of graduate instructor. (Not thesis, for Ph.D. candidates only.)

Credit, 1-4.

### 900. DOCTORAL DISSERTATION.

Credit, 18.

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

#### 540. BASIC NUTRITION.

Basic principles of human nutrition. The nutrients, i.e., energy, protein, vitamins, minerals, and water, and their chemical and physiological roles in metabolism.

Ms. Beal, Mr. Pellett, Mr. Weatherholtz.

#### 612. EXPERIMENTAL FOODS.

Fundamental principles of food quality evaluation, development of an independent research problem.

One class hour, two 3-hour laboratory periods.

Prerequisites, FS&N 251 or equivalent, Chem 160 or permission of instructor.

Ms. Davis.

#### 640. NUTRITION IN THE LIFE CYCLE.

Nutritional needs at various stages in the life cycle, i.e., pregnancy and lactation, infancy, childhood, adolescence, adult life and the aged.

Prerequisite, FS&N 240 or permission of instructor.

Ms. Beal.

#### 642. COMMUNITY NUTRITION.

Community response through its agencies and institutions, public, private, and voluntary, in providing nutrition care, services and education.

Prerequisite, FS&N 640 or permission of instructor.

Ms. Wright.

#### 643. NUTRITIONAL PROBLEMS OF THE UNITED STATES.

Examination of the factors within the United States resulting from and causing malnutrition. Will include obesity, coronary heart disease, diabetes, alcoholism, food fads and quackery, food additives and unintentional residues.

Prerequisites, FS&N 340/640 or permission of instructor.

Ms. Beal, Mr. Pellett, Mr. Weatherholtz.

#### 644. NUTRITIONAL PROBLEMS OF DEVELOPING NATIONS.

Malnutrition as it exists in developing countries and its socioeconomic background. Protein-energy malnutrition, famine, vitamin and mineral deficiency diseases, synergism between nutrition and infection and the role of international agencies in fighting malnutrition.

Prerequisites, FS&N 340/640 or permission of instructor.

Mr. Pellett.

#### 645. NUTRITION IN DISEASE.

Physiological basis for therapeutic diets in certain diseases. Current medical and nutrition literature used.

Prerequisite, FS&N 340, Biochem 220, Zool 135 or permission of instructor.

Ms. Wright.

#### 660. ADVANCED METHODS OF COMPUTERIZATION IN NUTRITION AND FOOD SERVICE.

The mathematical foundations of computations with food nutrients and recipe data. The data file structure of computerized food and nutrient accounting systems. The principle of mathematical optimization techniques and its utilization in computerized menu planning and scheduling models. Laboratory work with computer applications.

Prerequisites, FS&N 340/640, Mgt 110, Math 115 or equivalents.

Mr. Balintfy.

## GRADUATE SCHOOL

## Forestry and Wood Technology

### GRADUATE FACULTY

DONALD R. PROGULSKE, *Professor and Head of the Department of Forestry and Wildlife Management*, B.S., Massachusetts, 1950; M.S., Virginia Polytechnic Institute, 1952; Ph.D., University of Missouri, 1956.

BRAYTON F. WILSON, *Associate Professor of Forestry and Graduate Program Director in Forestry*, B.A., Harvard, 1955; M.F., 1957; Ph.D., California at Berkeley, 1961.

R. BRUCE HOADLEY, *Professor of Wood Technology and Graduate Program Director in Wood Technology*, B.S., Connecticut, 1955; M.F., Yale, 1957; D.F., 1962.

HERSCHEL G. ABBOTT, *Professor of Forestry*, B.S., Maine, 1943; M.F., Harvard, 1952; M.A., 1959.

ROBERT S. BOND, *Professor of Forestry*, B.S., Massachusetts, 1951; M.F., Yale, 1952; Ph.D., State University of New York, 1966.

CARL A. CARLOZZI, *Associate Professor of Resource Planning*, B.S., Kent State, 1955; M.A., 1957; Ph.D., Michigan, 1965.

BURNELL C. FISCHER, *Assistant Professor of Forestry*, B.S., Purdue, 1969; M.S., 1971; Ph.D., 1974.

HAROLD B. GATSLICK, *Professor of Wood Technology*, B.S., State University of N.Y., 1944; M.S., 1948; Ph.D., 1954.

WILLIAM P. MACCONNELL, *Professor of Forestry*, B.S., Massachusetts, 1943; M.F., Yale, 1948.

DONALD L. MADER, *Professor of Forestry*, B.S., State University of N.Y., 1950; M.S., Wisconsin, 1954; Ph.D., 1956.

ALAN A. MARRA, *Visiting Professor of Wood Technology*, B.S., State University of N.Y., 1940; M.S., 1942; Ph.D., University of Michigan, 1955.

JOSEPH C. MAWSON, *Assistant Professor of Forestry*, B.S., Maine, 1956; M.F., Duke, 1958; M.A., California at Berkeley, 1966.

JOHN H. NOYES, *Professor of Forestry*, B.S., Connecticut, 1937; M.F., Yale, 1939.

BRIAN PAYNE, *Adjunct Assistant Professor of Forestry*, B.S., California at Berkeley, 1961; M.F., Duke, 1962; Ph.D., California at Berkeley, 1969.

WILLIAM W. RICE, *Associate Professor of Wood Technology*, B.S., Maine, 1948; M.F., Yale, 1949; D.F., Duke, 1964.

Degrees offered are the Master of Science (with thesis and non-thesis options) and the Doctor of Philosophy.

Areas of program specialization include forest soils and ecology, physiology, silviculture, forest management, resource economics and planning, forest recreation, forest hydrology, wood science and technology, product development and processing, operations research, and marketing, with emphasis on structural elements, components, and systems for housing.

Completion of a master's level program requires from four to five semesters depending upon the stu-



## UNIVERSITY OF MASSACHUSETTS

dent's background and educational objectives; and an additional two, or more likely, three years are needed to attain the doctorate. A reading knowledge of one or more foreign languages sufficient to understand journal material may be required of doctoral students in certain areas of specialization.

An applicant's undergraduate preparation preferably should have focused on forestry, wood science and technology, engineering, planning, or a closely related field in natural resource management, conservation or natural science. Students from other backgrounds can be accommodated but longer-than-typical programs will be required to qualify for a degree which is normally based on a non-thesis program with a professional, rather than research, orientation.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### FORESTRY COURSES OPEN TO GRADUATE STUDENTS ONLY

(For either major or minor credit)

##### 700. SPECIAL PROJECT.

Selected research problem in forestry not related to the candidate's thesis. *Credit, 2-4.*

##### 701. ADVANCED FOREST SOILS.

The relation of soils to tree growth and other environmental factors with emphasis on research methods, site-evaluation, water relationships, and fertility; laboratory and field exercises.

Prerequisite, For 524 or equivalent. *Mr. Mader.*

##### 702. AERIAL PHOTO-INTERPRETATION.

Advanced aerial photo-interpretation emphasizing the analysis of natural vegetation and land use in natural resource studies and planning.

Prerequisite, For 530 or equivalent. *Mr. MacConnell.*

##### 703. ADVANCED FOREST ECOLOGY

Methods for describing and analyzing forest ecosystem structure; effects of environmental factors on forest ecosystems; forest ecosystem processes and development.

Prerequisite, For 523 or equivalent. *Mr. Fischer.*

##### 704. ADVANCED SILVICULTURE.

Growth and reproductive characteristics and requirements of trees and forest stands as they affect silvicultural management, particularly in relation to thinning and the establishment of forest regeneration.

Prerequisites, For 523, 524, and 526, or equivalents. *Mr. Abbott, Mr. Fischer.*

##### 706. ADVANCED FOREST MENSURATION.

Regression analysis applied to stand and tree volume determination, stand growth and yield, forest site evaluation, and related measurement problems. Computer techniques used to solve some of the problems.

Prerequisites, For 525 and 534, or equivalents. *Mr. Mawson.*

##### 707. ADVANCED FOREST MANAGEMENT.

Economic evaluation of forest enterprises; appraisal of rates of return, damage, and stumpage values.

Prerequisite, For 540 or equivalent. *Mr. MacConnell.*

##### 708. MICROECONOMICS OF FORESTRY I.

Principles of microeconomics as applied to forestry problems with emphasis on marginal analysis in regard to land, labor, and capital.

Prerequisite, For 535 or equivalent. *Mr. Bond.*

##### 709. MICROECONOMICS OF FORESTRY II.

An examination of models and simulation techniques employed in forest resource use decision-making.

*Mr. Bond.*

## FORESTRY AND WOOD TECHNOLOGY

##### 791, 792 A. B. SEMINAR.

Specialized study in a selected area of forestry. *Credit, 1-3.*

##### 800. MASTER'S THESIS.

*Credit, 6-10.*

##### 900. DOCTORAL DISSERTATION

*Credit, 18.*

#### FORESTRY COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

(For either major or minor credit)

##### 512. DENDROLOGY.

Taxonomic features, silvical characteristics, and distribution of the principal tree species of temperate North America; a description of the forests of the world, their distribution and economic importance.

Three class hours, two 2-hour laboratory periods.

*Credit, 4.* *Mr. Abbott, Mr. A.B. Cole.*

##### 523. SILVICS.

Forest ecology and tree growth as a foundation for silviculture and other uses of the forest; interactions of environment and forests; development and classification of forest communities. *Mr. Fischer.*

##### 524. FOREST SOILS.

Effects of soil properties on tree growth; relationship of soils to silviculture, harvesting, watersheds, wildlife, and range management; forest soil description, classification, and mapping. *Mr. Mader.*

##### 525. THE ELEMENTS OF FOREST MENSURATION.

The measurement of trees, stands, and forest products; field and office practice in timber-estimating and log-scaling; collection and compilation of forest inventory data.

*Mr. Mawson.*

##### 526. THE PRINCIPLES OF SILVICULTURE.

Forest culture of wood crops; regeneration and intermediate cuttings, silvicides, prescribed burning, site-treatment, slash disposal, nursery management, forest planting and direct seeding; interactions with management for water, wildlife, recreation, and esthetics.

Prerequisite, For 523. *Credit, 4.* *Mr. Fischer.*

##### 527. TREE PHYSIOLOGY.

Growth and development during the life cycle of trees, emphasizing the whole-plant approach and phenomena best-studied in trees; the physiological basis of silviculture.

Prerequisite, Botany 211 or equivalent. *Mr. Wilson.*

##### 528. FOREST HYDROLOGY.

Principles and factors controlling the hydrological cycle on forest lands. Review of forest watershed management research on the influence of soils, vegetation, and management practices on water yields and water quality. Watershed management as a part of integrated forest land management. *Mr. Mader.*

##### 529. FOREST PROTECTION.

Principles of protecting forests from fire, insects, diseases, domestic animals, wildlife, and atmospheric agencies with emphasis on the prevention and control of forest fires.

*Mr. Abbott.*

##### 531. AERIAL PHOTOGRAMMETRY.

Principles of photo-interpretation and cartography for foresters, wildlife biologists, natural-resource planners and others concerned with large land surfaces. Photo-interpretation and map making are laboratory activities. *Mr. MacConnell.*

##### 532. FOREST-TREE IMPROVEMENT.

Tree introduction, geographic variation, tree selection, vegetative propagation, controlled pollination and hybridization, seed-orchard management. *Mr. Abbott.*

##### 534. ADVANCED FOREST MENSURATION.

The theory and application of sampling techniques in forest survey and research problems including simple random,

## FRENCH

stratified, subsampling, representative, and probability sampling.  
Mr. Mawson.

### 535. FOREST ECONOMICS.

The application of economic principles to the allocation of land, labor, and capital in forest enterprises; market and pricing theory of forest products.  
Prerequisite, introductory economics.  
Mr. Bond.

### 536. FOREST RESOURCES POLICY.

Forest policy in the United States — its history and the influences and processes of forest resource policy formulation.  
Mr. Bond.

### 539. THE FOREST RESOURCES OF NORTH AMERICA.

The forest resources of North America and their management for multi-purpose economic and social benefits; regional physiography, climate, vegetation, demography, and economic base; environmental, economic, and socio-political constraints affecting management.  
Prerequisite, natural resource, regional-planning, or similar backgrounds.  
Mr. Fischer.

### 540. PRINCIPLES OF FOREST MANAGEMENT.

Multiple-use management of forest land, organization of the forest for sustained-yield management; preparation of a management plan for a 10,000-acre forest.  
Laboratory period optional for non-forestry majors.  
Prerequisite for the laboratory, For 525.

Credit, 3 or 5. Mr. MacConnell.

### 602. ECOLOGICAL PRINCIPLES IN RESOURCE PLANNING.

Analysis of ecological principles and their relationship and importance to resource planning. State and federal conservation programs chosen for critical case study.  
Prerequisite, permission of instructor.  
Mr. Carlozzi.

### WOOD TECHNOLOGY COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

#### 700. SPECIAL PROJECT.

Selected research problem in wood technology not related to the candidate's thesis.  
Credit, 2-4.

#### 710. CHEMICAL MODIFICATION OF WOOD.

Basic concepts and techniques concerning the chemical modification of wood; the potential and limitations or physical and chemical treatments as they affect the dimensional stability and durability of wood.  
Prerequisites, organic chemistry and Wood Tech 504.  
Mr. Gatslick.

#### 711. POLYSACCHARIDE AND LIGNIN CHEMISTRY.

The chemistry of lignin, hemicelluloses and cellulose in regard to the wood as a chemical raw material.  
Prerequisites, organic chemistry, Wood Tech 538, or equivalent.  
Mr. Marra.

#### 791, 792. SEMINAR.

Specialized study in a selected segment of wood-products marketing or wood technology.  
Credit, 1-3 each semester.

#### 800. MASTER'S THESIS.

Credit, 6-10.

#### 900. DOCTORAL DISSERTATION.

Credit, 18.

### WOOD TECHNOLOGY COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

#### 501. WOOD ANATOMY AND IDENTIFICATION.

A basic anatomical study of wood elements, their structural characteristics and function; identification of woods.  
Mr. Hoadley.

#### 502. PRIMARY TIMBER CONVERSION.

Survey of systems used to convert logs into lumber and allied

by-products; drying, grading and distribution of primary wood products.  
Mr. Rice.

#### 503. FOREST PRODUCTS.

A survey of the principal forest products, their manufacture and distribution.  
Mr. Gatslick.

#### 504. PROPERTIES OF WOOD.

The physical and mechanical properties of wood in relation to its use; methods and apparatus for measurement and testing.  
Mr. Hoadley.

#### 506. WOOD MACHINING TECHNOLOGY.

Fundamentals of cutting action as applied to wood; survey of commercial wood-machining equipment and processes.  
Prerequisites, Wood Tech 501 and 504, or permission of instructor.  
Mr. Rice.

#### 508. WOOD SEASONING AND PRESERVATION.

Wood-liquid relationships and the processes used to dry wood and/or impregnate it with preservatives.  
Mr. Rice.

#### 511. WOOD ADHESIVE TECHNOLOGY.

Basic concepts, theories, and the applied techniques of gluing wood and fibrous composites.  
Prerequisites, Wood Tech 501, 504, and organic chemistry; or permission of instructor.  
Mr. Marra.

#### 538. WOOD CHEMISTRY.

Introduction to the chemistry and surface phenomena of the principal products found in wood.  
Prerequisite, organic chemistry.  
Mr. Marra.

## French

### GRADUATE FACULTY

MICHELINE DUFAU, *Professor of French and Chairman of the Department of French and Italian*, B.ès-L., Paris, 1945; B.S., New York University, 1951; Ph.D., 1960.

DENNIS D. PORTER, *Associate Professor and Graduate Program Director*, B.A., Cambridge, 1957; Ph.D., California at Berkeley, 1966.

JOHN P. BERWALD, *Assistant Professor and Director of the M.A.T. Program in French*, B.A., Michigan, 1956; M.A., Middlebury, 1964; Ph.D., Ohio State, 1971.

JEANNETTE D. BRAGGER, *Assistant Professor*, B.A. California at Santa Barbara, 1966; M.A., 1968; Ph.D., 1971.

BEATRICE BRAUDE, *Assistant Professor*, B.A., Hunter College, 1933; M.A., Columbia, 1939; Ph.D., City University of New York, 1971.

FREDERICK A. BUSI, *Associate Professor*, B.A., American International 1960; M.A., Connecticut, 1963; Ph.D., 1965.

MARIE-ROSE CARRE, *Professor*, B.ès-L., Alger, 1938; L.ès-L., 1940; D. de l'U., Paris, 1963.

THOMAS CASSIRER, *Professor*, B.A., McGill, 1945; Ph.D., Yale, 1953.

URSULA F. CHEN, *Associate Professor*, B.A., Cologne, 1950; M.A., Cornell, 1958; Ph.D., 1968.

DONALD G. DUGAS, *Assistant Professor*, B.A., Holy Cross, 1955; M.A., Middlebury, 1956; Ph.D., Michigan at Ann Arbor, 1969.

DORANNE FENOALTEA, *Assistant Professor*, B.A., Mount Holyoke, 1959; M.A., Harvard, 1968; Ph.D., 1971.

## UNIVERSITY OF MASSACHUSETTS

CHRISTIAN GARAUD, *Assistant Professor*, B.ès-L., Poitiers, 1954; L.ès-L., 1958; D. de 3e cycle, 1961 (in Classics); D. de 3e cycle, 1969 (in French.)

WILLIAM V. GUGLI, *Assistant Professor*, B.A., Brown, 1954; B.S.F.S., Georgetown, 1955; M.A., Brown, 1959; Ph.D., Syracuse, 1967.

AGNES G. RAYMOND (HOWARD), *Associate Professor*, B.A., Wilson College, 1937; M.A., Syracuse, 1945; D.M.L., Middlebury, 1956.

PATRICIA J. JOHNSON, *Associate Professor*, B.A., Minnesota, 1953; M.A., 1956; Ph.D., 1960.

ROBERT B. JOHNSON, *Professor*, B.A., Ohio, 1940; M.A., Wisconsin, 1946; Ph.D., 1949.

NANCY E. LAMB, *Assistant Professor*, B.A., Mt. Holyoke, 1959; M.A. (French), Middlebury, 1960; M.A. (Spanish), 1964; D.M.L., 1971.

PAUL A. MANKIN, *Associate Professor*, B.A., California at Los Angeles, 1948; M.A., 1953; Ph.D., Yale, 1959.

DANIEL R. MARTIN, *Assistant Professor*, B.A., Illinois at Chicago Circle, 1969; M. Phil., Yale, 1972; Ph.D., 1973.

DAVID O'CONNELL, *Assistant Professor*, B.A., St. Peter's College, 1962; M.A., Princeton, 1964; Ph.D., 1966.

BENJAMIN ROUNTREE, *Associate Professor*, B.A., Georgia, 1953; M.A., 1955; Ph.D., Yale, 1960.

RICHARD SANTERRE, *Assistant Professor*, B.A., Boston College, 1966; M.A., 1968; Ph.D., 1974.

HAROLD L. SMITH, JR., *Associate Professor*, B.ès-L., Paris, 1940; B.A., Swarthmore, 1947; M.A., Columbia, 1950; Ph.D., Wisconsin, 1955.

SARA STURM, *Professor of French and Italian*, B.A., Minnesota, 1963; M.A., 1965; Ph.D., North Carolina, 1967.

ROBERT E. TAYLOR, *Professor*, B.A., Reed College, 1943; M.A., Columbia, 1947; Ph.D., 1951.

SEYMOUR S. WEINER, *Professor*, B.A., City College of New York, 1940; M.A., California at Berkeley, 1941; Ph.D., Columbia, 1950.

## SUPPORTING FACULTY

SARAH N. LAWALL, *Professor of Comparative Literature*, B.A., Oberlin, 1956; Ph.D., Yale, 1961.

## FRENCH

the degree at the University, the following special requirements must be met:

1. A minimum of 18 credit hours after the M.A.
2. Romance Philology or its equivalent (3 credits; not to satisfy requirements 6. or 7. below).
3. Bibliography and Methods or its equivalent (3 credits, not to be taken simultaneously with Romance Philology).
4. Two foreign languages (i.e., in addition to French and English):
  - a. One at advanced-level proficiency (determined by a score of 700 on the Princeton ETS examination, or three credits of literature at junior-senior level or above with minimum grade of B).
  - b. The other at intermediate-level proficiency (either by score of 550 on Princeton ETS examination or a minimum grade of B at the 140 or 409 level).
5. Proficiency in Latin, required of candidates writing a dissertation on the Middle Ages or the Renaissance, determined by the Classics Department at the University.
6. The language requirement must be satisfied before the preliminary examination.
7. The satisfactory completion of written and oral preliminary examinations on:
  - a. Two broad chronological periods/centuries, etc. Normally they should be contiguous (19th-20th, 18th-19th, etc.).
  - b. A genre.
8. Six graduate credits in each of two additional fields (not to be covered by preliminary examinations.)
9. Three graduate credits in each of the remaining fields (not to be covered by preliminary examinations.)
10. French 900 — Ph.D. Dissertation.

## MASTER OF ARTS DEGREE COURSE REQUIREMENTS

The required minimum of 30 credit hours is distributed as follows:

1. Expository Prose (3 credits)
2. Textual and Literary Analysis (3 credits)
3. French Civilization I (3 credits)
4. French 700 or above (12 credits)
  - a. French 800 (thesis) may be elected for 6 credits
5. 600-level in French or related field (9 credits)

A terminal examination, both written and oral, is given upon satisfactory completion of course requirements.

## THE MASTER OF ARTS IN TEACHING DEGREE

The Department of French and Italian offers a program of studies in French language and literature and professional preparation leading to the degree of Master of Arts in Teaching. The primary aim of the program is to prepare students with a B.A. degree to become effective classroom teachers at the secondary school level. A total of 39 credit hours are required for the degree, of which 21 will be in French language and literature and 18 in professional education and electives. One semester of the program is to be devoted to a practicum consisting of a variety of field experiences. Students are expected to complete the M.A.T. requirements in three or four semesters, excluding summer work.

## THE FIVE COLLEGE COOPERATIVE Ph.D. PROGRAM. In addition to the general requirements for



## FRENCH

Courses specifically for the teacher of French include the following:

1. Introductory and advanced methods of teaching French at the secondary level.
2. Applied Linguistics.
3. Research studies in Foreign Language Education.
4. Practicums in teaching, individualized instruction, educational technology and supervision.
5. Independent study courses of directed readings.

Candidates entering the program are expected to be fluent in all aspects of the language. Undergraduate work should have been undertaken in phonetics, advanced grammar, composition, conversation and literature. Students deficient in French grammar or phonetics may be required to do remedial work in these areas once admitted to the program, but such work may not be counted towards the degree. Students transferring from other institutions may be granted up to nine semester hours towards the M.A.T. A final examination is given upon satisfactory completion of course work.

### 3-FIGURE COURSE NUMBERING SYSTEM

| Intermediate figure:   | Terminal figure:           |
|------------------------|----------------------------|
| 1 Middle Ages, 16th C. | 1, 2, 3 general            |
| 2 17th C.              |                            |
| 3 18th C.              |                            |
| 4 19th C.              | 4 plural genres, centuries |
| 5 20th C.              | 5, 6 novel                 |
| 6 language             |                            |
| 7 general              | 7, 8 poetry                |
| 8 special problems     |                            |
| 9 seminars             | 9 theater                  |

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY

**470. GRADUATE READING COURSE.**  
For graduate students in other departments preparing for their M.A. or Ph.D. reading examination. No previous knowledge of French required. *No. Credit.*

**700. SPECIAL PROBLEMS.**  
Directed study in some phase of linguistics or literature.

**701 (I), 702 (II). THE CRAFT OF FICTION IN THE 19TH CENTURY.**  
The exploration of different modes in the treatment of realism through a study of the craft of fiction of individual novelists. *Credit, 3 each semester.* Mr. Smith; Mr. Weiner.

**703. TEXTUAL AND LITERARY ANALYSIS.**  
Includes critical analysis of selected poems and passages of prose as well as of complete plays and novels.

**711. OLD FRENCH READINGS.**  
The monuments of French literature from the earliest times to the 15th Century. *Miss Dufau, Mrs. Sturm.*

**712. RABELAIS AND MONTAIGNE.**  
The changing ideas in the French Renaissance. *Mrs. Fenoaltea, Mr. Martin.*

**715. THE "ROMAN COURTOIS."**  
Emphasis on Chrétien de Troyes and his successors. Prerequisite, French 710 or equivalent. *Miss Dufau, Mrs. Sturm.*

**717. MEDIEVAL EPIC POETRY.**  
Some of the outstanding chansons de geste and the development of the cycles of epic poetry. Prerequisite, French 710 or equivalent. *Mrs. Sturm.*

**718. PLEIADE, "ECOLE LYONNAISE."**  
Emphasis on the Pleiade from the background of the "grands rhétoriqueurs," Marot and the "école lyonnaise." *Mrs. Fenoaltea.*

**719. THE MEDIEVAL THEATER.**  
The principal dramatic forms from the 12th through the 15th century. Prerequisite, French 710 or equivalent. *Miss Dufau.*

**720. SEVENTEENTH-CENTURY "LIBERTINAGE."**  
Aspects of the history of thought from Montaigne to Pierre Bayle. *Mr. Taylor.*

**721. LAFONTAINE AND HIS TIMES.** *Mr. Garaud.*

**722. MOLIERE.**  
The man and the dramatist, his ideas and his techniques. *Mr. Taylor, Mr. Rountree.*

**723. RACINE.**  
A detailed analysis of the major and minor plays as drama and as poetry. *Mr. Rountree, Mrs. Carre.*

**731. VOLTAIRE AND HIS TIMES.** *Mr. Taylor.*

**732. MONTESQUIEU AND HIS TIMES.** *Mrs. Raymond.*

**733. DIDEROT.**  
The original thinker and compiler. *Mr. Taylor.*

**760. EXPOSITORY PROSE.**  
Extensive practice of expository writing in French; further familiarization with the vocabulary of literary discourse.

**761. ROMANCE PHILOLOGY AND THE HISTORY OF THE FRENCH LANGUAGE.**  
The development of the Romance languages, particularly French, from Vulgar Latin. *Mrs. Chen.*

**762. PROVENÇAL PHILOLOGY.**  
Provençal or some other language particularly; see Department announcements. *Mrs. Chen, Mrs. Sturm.*

**763. THE HISTORY AND PRACTICE OF TRANSLATION IN FRENCH.**  
The practical and theoretical problems arising in translation. *Mr. Taylor, Mr. Weiner.*

**770. BIBLIOGRAPHY AND METHODS OF LITERARY RESEARCH.**  
Required of candidates for the degree of Doctor of Philosophy. *Mr. Taylor, Mr. Weiner.*

**771. FRENCH CIVILIZATION.**  
*Miss Bragget, Mr. Cassirer, Mr. Porter.*

**799. SEMINARS.**  
*Credit, 3 each semester. Maximum credit, 12.*

**800. MASTER'S THESIS.** *Credit, 6.*

**801. LITERARY CRITICISM: NINETEENTH CENTURY.**  
Development of criticism from Sainte-Beuve. *Mr. Weiner.*

**802. LITERARY CRITICISM: 20TH CENTURY.**  
Critical tenets and practices in the twentieth century. Read-through a study of the craft of fiction of individual novelists. *Credit, 3 each semester.* Mr. Smith, Mr. Weiner.

**845. BALZAC AND STENDHAL.**  
Explores selected works of these novelists from various modern critical points of view. *Mr. Porter, Mr. Weiner.*

## GRADUATE SCHOOL

# UNIVERSITY OF MASSACHUSETTS

# FRENCH

## 846. FLAUBERT AND ZOLA

Explores selected works of these novelists from various modern critical points of view. Mr. Porter, Mr. Smith.

## 848. BAUDELAIRE AND THE SYMBOLISTS.

Emphasis on the esthetics and poetics of Baudelaire alone; his work as an introduction to the gamut of symbolist poetry. Mr. Johnson.

## 853. THE ANTI-NOVEL AND ANTI-THEATER.

The reaction against established literary form and conventions in the novels of such authors as Sarraute, Robbe-Grillet, Butor, and Simon, and in the plays of such authors as Jonesco and Adamov. Mrs. Johnson.

## 854. CAMUS AND SATIRE.

The novels, short stories, plays, and philosophical essays. Mrs. Johnson.

## 855. PROUST AND GIDE.

Detailed analysis of parts of *A la recherche du temps perdu* and representative works of Gide's fiction. Mr. Mankin.

## 859. CLAUDEL AND GIRAUDOUX.

Their contribution to the literary theater of the 20th century as seen through a study of esthetic and moral values. Mrs. Raymond, Mr. Mankin.

## 900. DOCTORAL DISSERTATION.

Credit, 18.

## COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

### 561. ADVANCED GRAMMAR.

Mrs. Carre, Mrs. Chen, Mr. Rountree.

### 601, 602. LITERARY MOVEMENTS.

Characteristics and definitions of a selected movement or period (e.g., Baroque, Romanticism). Credit, 3 each semester.

### 604. THE ART OF LITERATURE.

The structures of literary works of art; emphasis on the esthetic. The genres vary; see Department announcement.

### 614. RENAISSANCE PROSE.

Major French prose writers of the 16th Century. Mrs. Fenoaltea, Mr. Martin.

### 617. RENAISSANCE POETRY.

Representative poets of the 16th Century. Emphasis on the *Pleiade*. Mrs. Fenoaltea, Mr. Martin.

### 621. 17TH-CENTURY COMIC VISION.

Emphasis on Molière, Mme de Sévigné, La Fontaine, and La Bruyère. Mr. Garaud, Mr. Rountree.

### 622. 17TH-CENTURY TRAGIC VISION.

The classical tragic vision in the theater and the novel as represented by Corneille, Racine, and Mme de La Fayette. Mrs. Carre, Mr. Rountree.

### 624. 17TH-CENTURY PHILOSOPHERS AND MORALISTS.

The writers most important in classical thought, especially Descartes, Pascal, and La Rochefoucauld. Mrs. Carré, Mr. Garaud.

### 634. 18TH-CENTURY LITERATURE.

The chief writers and thinkers of the Age of Enlightenment. Mrs. Raymond, Mr. Taylor.

### 635. 18TH-CENTURY NOVEL.

The satirical novel as represented by LeSage, Montesquieu, Voltaire, and Diderot; the sentimental novel as represented by Prévost, Marivaux, Rousseau, Bernardin de Saint-Pierre. Mr. Taylor.

### 639. 18TH-CENTURY THEATER.

Readings in the French theater from LeSage to Beaumarchais. Mrs. Raymond.

## 640. 19TH-CENTURY POETRY: THEMES

Themes vary; see Department announcement. Mr. Gugli, Mr. Johnson, Mr. Weiner.

## 644. 19TH-CENTURY POETRY: NERVAL AND THE PARNASSIANS.

The development of poetry between Romanticism and symbolism.

## 645. 19TH-CENTURY ROMANTIC NOVEL.

The development of the novel from the Revolution to mid-century: Constant, Chateaubriand, Balzac, Hugo, Dumas, Stendhal. Mr. Busi, Mr. Porter, Mr. Smith.

## 646. 19TH-CENTURY REALISTIC-NATURALISTIC NOVEL.

The novel of the second half of the century: Flaubert, Zola, Maupassant, etc. Mr. Busi, Mr. Smith, Mr. Weiner.

## 647. 19TH-CENTURY ROMANTIC POETRY

The major movements in poetry from Chénier to Baudelaire. Mr. Busi, Mr. Gugli, Mr. Weiner.

## 648. 19TH-CENTURY SYMBOLIST POETRY

Baudelaire, Rimbaud, Mallarmé, Verlaine. Mr. Johnson.

## 649. 19TH-CENTURY THEATER

The development of the theater from Hugo to Rostand and his contemporaries. Mr. Porter, Mr. Weiner.

## 654. FRENCH-AFRICAN AND CARIBBEAN LITERATURE

Mr. Cassirer.

## 655 (I), 656 (II). MAJOR FIGURES IN CONTEMPORARY NOVELS.

The novel of social concern, the novel of personal and esthetic concern, and the novel concerned with the human condition, tradition, and innovation.

Credit, 3 each semester.

Mrs. Johnson, Mr. Mankin, Mr. O'Connell, Mr. Weiner.

## 657. CONTEMPORARY FRENCH POETRY I.

Major French poets from the turn of the century to surrealism: Valéry, Apollinaire, Claudel, Reverdy, Eluard, Desnos, Cendrars and the beginning of surrealism with the first manifesto of 1924. Mr. Johnson, Mrs. Lawall.

## 658. CONTEMPORARY FRENCH POETRY II

French poetry from surrealism to the present: Breton, Char, Michaux, Perse, Ponge, Bonnefoy, and selected contemporaries. Surrealism as a movement in itself and as a precursor of more recent poetry.

Mrs. Carre, Mr. Johnson, Mrs. Lawall.

## 659. 20TH-CENTURY THEATER.

The main currents of modern French theater from symbolism to the theater of the absurd as seen in about fifteen representative plays. Mr. Mankin, Mrs. Raymond.

## 661. APPLIED LINGUISTICS (FRENCH).

French linguistics applied to the teaching of French in secondary schools. Mr. Berwald, Mrs. Chen.

## 662. METHODS OF TEACHING FRENCH

Teaching methods. Recommended for those intending to teach French in high schools or elementary schools. Mr. Berwald.

## 663. TEACHING METHODS FOR INTERMEDIATE AND ADVANCED FRENCH

The teaching of Intermediate and Advanced French. Continuation of Educ 307. Mr. Berwald.

## 674. FRENCH-CANADIAN LITERATURE.

Contemporary Canadian poets, novelists, and dramatists writing in French.

## Geology

### GRADUATE FACULTY

JOSEPH H. HARTSHORN, *Professor and Head of the Department of Geology and Geography*, B.S., Harvard, 1947; M.A., 1950; Ph.D., 1955.

CHARLES W. PITRAT, *Associate Professor and Graduate Program Director*, B.A., Kansas, 1949; M.S., Wisconsin, 1951; Ph.D., 1953.

RAYMOND S. BRADLEY, *Assistant Professor (Geog)*, B.Sc., Southampton (England); M.A., Colorado, 1971; Ph.D., 1974.

R. W. BROMERY, *Professor and Chancellor of the Amherst Campus*, B.S., Howard, 1956; M.S., American University, 1962; Ph.D., Johns Hopkins, 1968.

TERENCE BURKE, *Associate Professor (Geog)*, B.A., Birmingham (England), 1952; Ph.D., 1967.

DAYTON E. CARRITT, *Professor*, B.S., Rhode Island, 1937; Ph.D., Harvard, 1948.

OSWALD C. FARQUHAR, *Professor*, B.A., Oxford, 1947; M.A., 1948; Ph.D., Aberdeen, 1951.

JAMES A. HAFNER, *Associate Professor (Geog)*, A.B., Miami of Ohio, 1963; M.A., Michigan, 1965; Ph.D., 1970.

STEPHEN E. HAGGERTY, *Associate Professor*, B.S., London University, Imperial College of Science and Technology, 1964; Ph.D., 1968.

LEO M. HALL, *Associate Professor*, B.S., St. Lawrence, 1954; M.S., Cincinnati, 1956; Ph.D., Harvard, 1959.

JOHN F. HUBERT, *Professor*, B.A., Harvard, 1952; M.S., Colorado, 1954; Ph.D., Pennsylvania State, 1958.

LAURIE B. ISAACSON, *Assistant Professor*, A.B., Middlebury, 1968; M.S., Wyoming, 1972; Ph.D., Oregon State, 1974.

PETER B. ISAACSON, *Adjunct Assistant Professor*, B.A., Colorado, 1968; Ph.D., Oregon State, 1974.

HOWARD W. JAFFE, *Professor*, B.A., Brooklyn College, 1942; D.Sc., Geneva, 1972.

GEORGE E. MCGILL, *Professor*, B.A., Carleton College, 1953; M.S., Minnesota, 1955; Ph.D., Princeton, 1958.

DAVID R. MEYER, *Associate Professor (Geog)*, B.A., Concordia Teachers College, 1965; M.S., Southern Illinois, 1967; Ph.D., Chicago, 1970.

STEARNS A. MORSE, *Professor*, B.A., Dartmouth, 1952; M.S., McGill, 1958; Ph.D., 1962.

WARD S. MOTTS, *Associate Professor*, B.A., Columbia, 1949; M.S., Minnesota, 1951; Ph.D., Illinois, 1957.

ALAN W. NIEDORODA, *Assistant Professor*, B.A., Queens College, 1966; M.S., Florida State, 1968; Ph.D., 1972.

EDWARD A. PERRY, JR., *Associate Professor*, B.A., Dartmouth, 1964; Ph.D., Case Western Reserve, 1969.

RUTHERFORD H. PLATT, *Assistant Professor (Geog)*, B.S., Yale, 1962; J.D., Chicago, 1967; Ph.D., 1971.

PETER ROBINSON, *Professor*, B.A., Dartmouth, 1954; M.S., Otago, New Zealand, 1958; Ph.D., Harvard, 1964.

GREGORY W. WEBB, *Professor*, B.A., Columbia, 1948; M.A., 1950; Ph.D., 1954.

RICHARD W. WILKIE, *Associate Professor (Geog)*, B.A., Washington, 1960; M.A., 1963; Ph.D., 1968.

DONALD U. WISE, *Professor*, B.S., Franklin and Marshall, 1953; M.S., California Institute of Technology, 1955; Ph.D., Princeton, 1957.

### REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY DEGREE

The general requirements for the Ph.D. degree are those of the Graduate School. All candidates are expected to have a background approximately equivalent to this University's M.S. degree in Geology, although this by no means precludes special programs for those entering with special strength in another science. All candidates should be familiar with the current M.S. Degree Requirements. Additional requirements for the Ph.D. are as follows:

1. Course work or independent study, if any, deemed necessary to prepare the candidate for the preliminary comprehensive examination.
2. Ph.D. candidates are expected to gain some experience in teaching.
3. Qualification at the Intermediate level in one foreign language. French, German, and Russian are highly recommended. Other foreign languages may be accepted by the faculty on recommendation of the Guidance Committee if the candidate can demonstrate a professional need for the language offered.
4. Passage of a preliminary comprehensive examination in two major and two minor areas of concentration specified in the departmental announcement.
5. Participation in each semester of residence in Geology 790, Research Seminar, and at least one oral presentation of research results in this seminar.
6. Submission of a research manuscript to, or publication of a research article by, a reputable publisher prior to receipt of the degree. Abstracts do not satisfy this requirement.

These requirements are implemented with the aid of a Guidance Committee. Further details are contained in the Departmental announcement.

#### NOTE

By Graduate Council ruling, English is a foreign language if the candidate's native language is not English and if a significant body of (geologic) literature exists in the student's native language. When languages other than the above four are involved, judgement as to the existence of a significant body of geologic literature would rest with the Guidance Committee, the Graduate Geology Faculty concurring.

One purpose of the manuscript submission requirement is to encourage preparation of the dissertation in the form of one or more journal manuscripts.

### REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE

The general requirements for the M.S. degree are those of the Graduate School. In addition, the following are required:



## UNIVERSITY OF MASSACHUSETTS

## GEOLOGY

1. A full year course in two of the following: biology, chemistry, physics.
2. A full year course of college mathematics or statistics, beyond the pre-calculus level, appropriate to the student's course of study.
3. Six weeks of field training.
4. Participation in each semester of residence in Geology 790, Research Seminar, and at least one oral presentation of research results in this seminar.
5. An incoming candidate is given a diagnostic interview and assigned a temporary adviser. The candidate should then propose a guidance committee of three graduate faculty, for appointment by the Department Head. The program of study must be approved by the guidance committee. The committee conducts a semesterly review of the candidate's program and progress.
6. A candidate may elect a program with or without a thesis. The former is appropriate for those with strongly focused research interests, and the latter for those wishing to emphasize breadth of geological or interdisciplinary knowledge. The content of the General Examination and the number of examiners will reflect the candidate's choice of program. The General Examination will include a presentation and defense of a research project or thesis. Further details are contained in the Departmental announcement.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

#### 700. SPECIAL PROBLEMS.

Either or both of the following options may be selected:  
 A. Independent study — guided reading and/or laboratory study in subjects or techniques not covered by other courses in the department.  
 B. Research — original library, field and/or laboratory investigation of a selected problem.  
 Prerequisites, 45 credits in geology and permission of Department Head and instructor. *Credit, 2-6.*

#### 712. ADVANCED MINERALOGY.

Crystal chemistry, structure, and composition of minerals; interpretation, evaluation, and calculation of mineralogical data; precise measurement of mineralogical constants by optical microscopy, x-ray diffraction, and other methods.  
 Offered fall semester.  
 Prerequisite, Geol 611 or permission of instructor.  
 Mr. Jaffe or Mr. Morse.

#### 713. CLAY PETROLOGY.

Structure of clay minerals, identification, weathering and alteration of minerals, properties of clay surfaces, geochemical studies of clays in geology, soil science, and soil mechanics.  
 Prerequisite, permission of instructor. Mr. Perry.

#### 716. GEOCHEMISTRY.

Abundance relations and principles governing the distribution, behavior, and migration of the elements and nuclides in the geochemical spheres of the earth, in meteorites, and in the universe.  
 Offered spring semester.  
 Prerequisites, Geol 192 and 520 and one year of college chemistry, or permission of instructor. Mr. Jaffe.

#### 722. IGNEOUS PETROLOGY.

Introduction to phase equilibrium in mineral systems, with emphasis on liquidus relationships. Review of theoretical and experimental data and of natural occurrences and their bearing on problems of rock genesis.  
 Offered fall semester.  
 Prerequisite, Geol 621 or permission of instructor.  
 Mr. Morse.

#### 723. SEDIMENTARY PETROLOGY.

Analysis and origin of primary sedimentary structures; petrology of sandstones; heavy-mineral analysis and interpretation. Petrology of carbonate rocks. Field applications emphasized.  
 Offered spring semester.  
 Prerequisites, Geol 550 and 611. Mr. Hubert.

#### 724. METAMORPHIC PETROLOGY.

Introduction to phase equilibrium in mineral systems with emphasis on metamorphic reactions. Review of theoretical and experimental data and natural occurrence and their bearing on metamorphic processes and on the mapping of metamorphic mineral facies.  
 Offered fall semester.  
 Prerequisite, Geol 621 or permission of instructor.  
 Mr. Robinson.

#### 731. STRUCTURAL GEOLOGY OF METAMORPHIC ROCKS.

Analysis of the geometry of intensely deformed rocks with emphasis on interpretation of structural features in the field.  
 Offered fall semester.  
 Prerequisite, Geol 531 or equivalent. Mr. Hall.

#### 732. ADVANCED STRUCTURAL GEOLOGY.

Dynamics and mechanics of rock deformation, including theoretical and experimental studies, with field applications.  
 Offered spring semester.  
 Prerequisites, Geol 531 and calculus. Mr. McGill.

#### 735. REGIONAL GEOLOGY OF NORTH AMERICA.

Tectonic concepts as exemplified by the stratigraphic and structural evolution of North America.  
 Offered spring semester.  
 Prerequisite, Geol 530. Mr. Wise.

#### 741. STRATIGRAPHIC PALEONTOLOGY.

Application of selected fossils and faunal assemblages to stratigraphic correlation, and paleoecological and paleogeographic analysis, with reference to evolutionary trends.  
 Offered spring semester.  
 Prerequisites, Geol 540 and 551. Mr. Pittat.

#### 747. PALEOGEOGRAPHIC ANALYSIS.

Methods of paleogeographic analysis and mapping, including problems in stratigraphic synthesis, basin analysis, and paleogeologic and palinspastic mapping.  
 Offered spring semester.  
 Prerequisites, Geol 531, 540, and 550. Mr. Webb.

#### 751. SEDIMENTATION.

Analysis of the modes of origin of sedimentary rocks, with special reference to mudrocks, carbonates, and chemical sediments.  
 Offered fall semester.  
 Prerequisites, Geol 550 and 611. Mr. Hubert.

#### 752. GEOLOGICAL OCEANOGRAPHY.

Physical characteristics and geological processes of the ocean basins and margins, and their bearing on interpretation of geologic history.  
 Offered spring semester.  
 Prerequisites, Geol 550 and 666. Mr. Webb.

#### 756. COASTAL PROCESSES.

Sedimentologic and hydrographic processes of coastal environments and their relation to shoreline morphology and sediment transport and deposition. Emphasis on field studies of the estuaries and beaches along the New England shoreline.  
 Prerequisites, Geol 550 and 660, or permission of instructor.  
 Mr. Niedoroda.

#### 761. MAP INTERPRETATION.

A laboratory study of the various types of maps used by geologists, with special reference to the identification and interpretation of landforms and structures.  
 Offered fall semester.  
 Prerequisite, Geol 530. *Credit, 2.*

## GEOLOGY

### 762. ADVANCED GEOMORPHOLOGY.

A critical study of selected topics and current problems in geomorphology.

Offered spring semester.

Prerequisite, Geol 660.

*Credit, 2.* Mr. Doehring.

### 769. ADVANCED PHOTOGEOLOGY.

A laboratory area of selected problems, areas, and techniques. Some emphasis on the use of surface expression as a key to subsurface phenomena.

Offered fall semester.

Prerequisites, Geol 660 and 668.

*Credit, 2.*

### 771. PHYSICS OF THE EARTH.

Introduction to the physics of the earth as determined from seismological, heat flow, gravity, and paleomagnetic data and their relationship to observed geological phenomena.

Offered fall semester.

Prerequisites, Geol 670 and permission of instructor.

Ms. Isaacson.

### 772. ADVANCED GEOPHYSICAL INTERPRETATION TECHNIQUES.

Numerical and graphical analyses of air-borne and ground geophysical surveys, including the use of digital computer programs, and geologically meaningful interpretations.

Offered spring semester.

Prerequisites, Geol 670 and permission of instructor.

Ms. Isaacson.

### 781. GEOLOGY IN ENGINEERING.

Relation of geologic materials, processes, forms, and techniques to the planning and execution of engineering projects, such as river control, shoreline protection, and construction of highways, bridges, tunnels, dams, etc. Emphasis is on case histories.

Offered spring semester.

Prerequisites, Geol 520, 530, 550, and 660, or permission of instructor; Civ Eng 520 and/or other engineering courses recommended.

*Credit, 2.* Mr. Farquhar.

### 782. PETROLEUM GEOLOGY.

Geologic occurrence of oil and gas. Laboratory work consists of problems related to reservoir and trap conditions and to methods of subsurface study.

Offered fall semester.

Prerequisites, Geol 530 and 550; 735 desirable.

Mr. Webb.

### 783. METALLIFEROUS ECONOMIC GEOLOGY.

Nature, origin, and distribution of metalliferous ores. Criteria for recognition of ore deposits, changes in character of ore with depth, mineral associations, and types of wallrock alteration. Optical and microchemical properties of ore minerals and ore concentrates. Given in alternate years.

Offered fall semester.

Prerequisites, Geol 530 and 520; 722 desirable.

Mr. Haggerty.

### 784. NON-METALLIFEROUS ECONOMIC GEOLOGY.

Geology, distribution, and utilization of nonmetallic mineral deposits, including coal and other solid hydrocarbons. Given in alternate years.

Offered fall semester.

Prerequisites, Geol 530, 520, 550, and 611.

Mr. Farquhar.

### 786. HYDROGEOLOGY.

Theoretical and practical hydrogeology; ground-water hydraulics, chemistry of ground water, field methods, relation of ground water to geology, basinal, and regional groundwater problems.

Offered fall semester.

Prerequisites, one year of geology; one year of chemistry and Math 124 or equivalent recommended.

Mr. Motts.

### 790. SEMINAR.

Review of current literature or discussion of selected topics.

*Credit, 1 each semester.*

### 805. EVOLUTION OF GEOLOGIC CONCEPTS.

Perspective on current geological thought in the light of its

## GRADUATE SCHOOL

historical background; particular attention to controversial questions and to the rise and decline of ruling theories.

Offered spring semester.

Prerequisite, one year of graduate study.

*Credit, 2.* Mr. Motts.

### 846. CENOZOIC STRATIGRAPHY.

Occurrence, correlation, and origin of marine and terrestrial Cenozoic deposits and their relation to paleogeographic and tectonic conditions, with particular reference to North America.

Offered fall semester.

Prerequisites, Geol 550 and 660; 735 recommended.

Mr. Webb.

### 863. PHYSIOGRAPHY OF NORTH AMERICA.

A survey of the physiographic provinces of North America and their evolution. Emphasis on problems and the methods of approach.

Offered fall semester.

Prerequisites, Geol 660 and 735 desirable.

Mr. Motts.

### 887. ADVANCED HYDROGEOLOGY.

Advanced ground-water hydrology, analog models, pumping tests, flow-duration curves, flow nets, Hubbert's hydrologic models, water chemistry, and geophysical methods of investigation.

Offered spring semester.

Prerequisites, Geol 786 and Math 124, or permission of instructor.

Mr. Motts.

### 890. SEMINAR IN NORTHERN APPALACHIAN GEOLOGY.

The stratigraphy, structure, petrology, and geophysics of the Northern Appalachians and current research being conducted in the region.

Offered spring semester.

Prerequisites, Geol 531, 550, and 621 or equivalents.

*Credit, 1-3.* Mr. Hall, Mr. Robinson, Mr. Wise.

### 891. SEMINAR IN STRUCTURAL GEOLOGY.

Review and discussion of current research in structural geology.

Prerequisite, at least one graduate course in structural geology.

*Credit, 1-3.*

Mr. McGill, Mr. Hall, Mr. Wise, Mr. Robinson.

### 892. SEMINAR IN SEDIMENTOLOGY.

Depositional and diagenetic processes in terrigenous and carbonate environments and the interpretation of the rock record.

*Credit, 1-3.* Mr. Hubert.

### 893. SEMINAR IN PLEISTOCENE GEOLOGY.

Current work and publications in glaciology, glacial geology, and related aspects of Quaternary history. Studies of related fields, such as archaeology, early man, geochronology, paleontology, plant geography, and paleontology.

Prerequisite, permission of instructor.

*Credit, 1-3.* Mr. Hartshorn.

### 894. SEMINAR IN PETROLOGY.

The literature of igneous and metamorphic petrology and related aspects of mineralogy.

Prerequisites, Geol 611 and 671 or equivalents.

*Credit, 1-3.* Mr. Robinson, Mr. Morse, Mr. Jaffe, Mr. Haggerty, Mr. Hall.

### 800. MASTER'S THESIS.

*Credit, 10.*

### 900. DOCTORAL DISSERTATION.

*Credit, 18.*

COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS  
(For either major or minor credit)

### 611. OPTICAL MINERALOGY.

Principles of optics; optical properties of minerals and methods for their measurement, relationship between optical properties and crystallography; mineral identification by the

## UNIVERSITY OF MASSACHUSETTS

## GEOLOGY

immersion method; crystal chemistry of rock-forming minerals.

Offered fall semester.

Prerequisite, Geol 192. Mr. Jaffe, Mr. Hall, Mr. Morse.

### 617. AQUEOUS GEOCHEMISTRY.

Chemical processes affecting the distribution and circulation of chemical compounds in natural waters, and the formulation of an adequate theoretical basis for the chemical behavior of ocean waters, estuaries, rivers, lakes, groundwaters and soil-water systems.

Prerequisites, Chem 111, 112.

Mr. Perry.

### 618. SEDIMENTARY GEOCHEMISTRY.

The evolution of sedimentary rocks, the geochemical cycles of the major elements in the Earth's crust, and the applications of isotope geochemistry.

Prerequisites, Chem 111, 112, or permission.

Mr. Perry.

### 621. PETROGRAPHY.

Identification of minerals in thin section; study of common igneous, sedimentary, and metamorphic rocks in thin section; routine petrographic calculations and measurements; introduction to petrogenetic theory. Examination of selected igneous and metamorphic rocks in the field.

Offered spring semester.

Prerequisites, Geol 220 and 611.

Mr. Robinson.

### 630. TECTONICS.

Past and present mechanisms creating the broader framework of global geology; mountain-building, ocean-basin structure, continental drift, mantle processes, continental evolution, early history of the earth, structural geology of selected key regions of the globe.

Offered fall semester.

Prerequisites, Geol 531, 520; undergraduates by permission.

Mr. Wise.

### 632. ADVANCED GEOLOGICAL MAPPING.

Complete series of operations required for publication of a geological map: field location and drawing of contacts, collection and interpretation of field notes, automated data reduction, drafting, and methods of reproduction.

Offered fall semester.

Prerequisites, Geol 220 and 231, or equivalent training.

Mr. Robinson, Mr. Wise.

### 634. ASTROGEOLOGY.

Geology of the solar system with emphasis on the solid bodies, age, sequence of events, composition, surficial and internal geologic processes. Photogeologic mapping of selected portions of Moon and Mars using recent imagery from the space program.

Offered fall semester.

Prerequisites, Geol 531, 520, undergraduates by permission.

Mr. Wise.

### 645. PALEOECOLOGY.

Application of ecological principles to the interpretation of fossil animal and plant communities as indicators of depositional environments. Emphasis on marine faunas.

Offered spring semester.

Prerequisites, Geol 540 and 551.

Mr. Pitrat.

### 651. GEOMETRICS.

Design of geological experiments; the collection and analysis of quantitative data in geology.

Offered fall semester.

Prerequisite, permission of instructor.

Mr. Hubert.

### 655. PHYSICAL OCEANOGRAPHY.

Physical properties of sea water and their variations; water masses and their circulation patterns; interaction between ocean and atmosphere; dynamics of waves, tides, and ocean currents; techniques of oceanographic study.

Offered fall semester.

Prerequisites, two years of college work toward a major in science or engineering; Physics 141 and 142; or 161, 162, and 163; calculus recommended.

Mr. Niedoroda.

### 660. GEOMORPHOLOGY.

Origin and developments of landforms in relation to geological processes, climate, and tectonic history. Application of geomorphic methods to interpretation of geologic history.

Offered fall semester.

Prerequisite, Geol 230 or permission of instructor.

Mr. Doehring.

### 666. PLISTOCENE GEOLOGY.

Geochronology of Pleistocene time as related to climatic changes and their influence on glaciology, erosional and depositional processes, landforms, sedimentary deposits, shifting sea level, and the paleontological record. Field trips by arrangement.

Offered spring semester.

Prerequisite, permission of instructor.

Mr. Hartshorn.

### 668. PHOTOGEOLOGY AND REMOTE SENSING.

Laboratory study of the instruments and methods employed in making measurements and preparing base maps and geologic maps from vertical and oblique aerial photos, together with applications of other remote-sensing techniques.

Offered spring semester.

Prerequisite, Geol 531.

### 670. GEOPHYSICS.

The physics of the earth and the gravitational, magnetic, electrical, and seismic methods of geophysical exploration. Laboratory problems and computations.

Offered fall semester.

Prerequisites, Geol 230 and 520, or permission of instructor.

Ms. Isaacson.

### COURSES NOT FOR MAJOR CREDIT

(No graduate credit for students majoring in Geology)

### 520. INTRODUCTORY PETROLOGY.

The classes of rocks with reference to manner of origin, modes of occurrence, structural features, and the chemical and petrographic distinctions within each group.

Offered spring semester.

Prerequisite, Geol 192.

Credit, 1 Mr. Jaffe, Mr. Hall, or Mr. Morse.

### 530. FIELD AND STRUCTURAL GEOLOGY I.

Basic methods of field geology; occurrences and recognition of geologic structure; preparation and interpretation of geologic maps; solution of simple structural problems.

Offered fall semester.

Prerequisite, an introductory geology sequence.

Mr. McGill, Mr. Hall, Mr. Wise.

### 531. FIELD AND STRUCTURAL GEOLOGY II.

Structural and dynamic analysis of deformed rocks; introduction to tectonics; field study of complex areas.

Offered spring semester.

Prerequisites, Geol 520, 530.

Mr. Hall, Mr. Robinson, Mr. Wise.

### 540. INVERTEBRATE PALEONTOLOGY.

History, development, and identification of invertebrate animal fossils. Field trips by arrangement.

Offered fall semester.

Prerequisite, an introductory geology sequence or permission of instructor.

Mr. Pitrat.

### 550. SEDIMENTOLOGY.

Processes acting on sediments; composition, primary structures, origin, and classification of sedimentary rocks.

Offered fall semester.

Prerequisite, Geol 520.

Mr. Hubert.

### 551. STRATIGRAPHY AND HISTORICAL GEOLOGY

Principles of stratigraphic correlation; methods of reconstruction of earth history; tectonic evolution of selected regions. Offered spring semester.

Prerequisites, Geol 520, 530, 540, and 550, or permission of instructor.

Mr. Webb.



## GERMANIC LANGUAGES AND LITERATURES

### 580. ENGINEERING GEOLOGY.

Materials and surface features of the earth and their relation to engineering problems; map reading as related to the phenomena of physical geology.  
Offered spring semester.

Mr. Farquhar.

### 589. FIELD PROBLEMS.

Directed field study and/or research.  
One week of full-time summer work for each credit.  
Prerequisites, approval of faculty adviser and department head.

## Germanic Languages and Literatures

### GRADUATE FACULTY

SIGRID BAUSCHINGER, *Associate Professor and Head of the Department of Germanic Languages and Literatures*, Ph.D., Frankfurt, 1959.

FRIEDRICH WILHELM VON KRIES, *Associate Professor and Graduate Program Director*, B.A., British Columbia, 1957; M.A., Washington, 1962; Ph.D., 1965.

E. M. BEEKMAN, *Associate Professor*, B.S., California at Berkeley, 1963; Ph.D., Harvard, 1968.

JAMES E. CATHEY, *Associate Professor*, B.S., Oregon State 1962; M.A., Washington, 1964; Ph.D., 1967.

FRANK R. HUGUS, *Assistant Professor*, B.S., Pennsylvania State, 1963; M.A., 1965; Ph.D., Chicago, 1972.

HENRY A. LEA, *Associate Professor*, B.S., Pennsylvania, 1942; M.A., 1951; Ph.D., 1962.

SARA J. LENNOX, *Assistant Professor*, B.A., De Pauw, 1965; M.A., Wisconsin, 1966; Ph.D., 1973.

WILFRIED MALSCH, *Professor*, Ph.D., Freiburg, 1957.

VOLKER MEID, *Professor*, Ph.D., Frankfurt, 1965.

WOLFGANG PAULSEN, *Professor*, Ph.D., Berne, 1934.

KLAUS PETER, *Associate Professor*, Ph.D., Frankfurt, 1965.

CARROLL E. REED, *Professor*, B.A., Washington, 1936; M.A., 1937; Ph.D., Brown, 1941.

ALBERT M. REH, *Associate Professor*, Ph.D., Munich, 1957.

LAWRENCE RYAN, *Professor*, B.A., Sydney, 1953; Ph.D., Tübingen, 1958.

EVA SCHIFFER, *Associate Professor*, B.S., Massachusetts, 1946; M.A., Radcliffe, 1947; Ph.D., 1962.

### ASSOCIATE FIVE-COLLEGE GRADUATE FACULTY

SIDONIE CASSIRER, *Professor* (Mount Holyoke College).

JUDITH RYAN, *Associate Professor* (Smith College).

WILLY SCHUMANN, *Professor* (Smith College).

HANS R. VAGET, *Associate Professor* (Smith College).

The Department of Germanic Languages and Literatures offers graduate work leading to the degrees of

## GRADUATE SCHOOL

Master of Arts (M.A.), Master of Arts in Teaching (M.A.T.) and the Doctor of Philosophy (Ph.D.) in three areas of specialization: Modern German Literature, Medieval Literature and Germanic Philology.

### FIVE-COLLEGE COOPERATIVE Ph.D. REQUIREMENTS

*For Candidates Specializing in Modern German literature*

The following courses are required:

1. 702, Old High German, or 703, Gothic, or 704, Old Norse, or 705 Old Saxon, or English 702, Old English.
2. One course in medieval literature.
3. One course in the literature of the 15th, 16th, and 17th centuries.
4. In general, it is expected that the remaining courses will be chosen from the literature courses offered by the Department.

*For Candidates specializing in Medieval Literature*

The following courses are required:

1. 702, Old High German.
2. 704, Old Norse, or 705, Old Saxon, or 703, Gothic, or English 702, Old English, or French 710, Old French.
3. Two courses in German literature from the 15th century to the present.

In general, it is expected that the remaining courses will be chosen from the medieval literature courses offered by the Department. Recommendations for additional courses: one course in medieval history, one course in medieval philosophy.

*For Candidates specializing in Germanic Philology*

The normal program requires the completion of six courses in Philology, two courses in Linguistics, one course in Medieval Literature, and one course in Modern Literature.

*Language requirement:*

Candidates for the Ph.D. will be required to show advanced proficiency in one foreign language (other than German or English) pertinent to their field of specialization.

### THE MASTER OF ARTS DEGREE PROGRAM

The M.A. degree program is designed to provide both a program meaningful in itself and a foundation for further progress toward the Ph.D.

The Department reserves the right to grant the M.A. as a terminal degree; admission to candidacy for the Ph.D. requires the Department's permission and does not follow automatically upon completion of the M.A. Prerequisites for admission include a B.A. degree with a major in German language and literature and indication of ability to do successful graduate work. Deficiencies in literary background and insufficient command of spoken or written German must be remedied.

*Language requirement:* For the M.A. degree the Department requires proficiency in German.

*Program of study:* Ten courses (30 credit hours) are required of all M.A. candidates by University regula-

## UNIVERSITY OF MASSACHUSETTS

tion. Full-time students are normally expected by the Department to take a minimum of *three* courses in each semester of their first academic year. Those holding teaching assistantships in the Department are expected to complete their course requirements for the M.A. within four consecutive semesters of the regular academic year. The successful completion of the following courses is required:

- 585. Structure of German or 584. History of German.
- 701. Middle High German.
- 720. Advanced Composition and Translation.
- 780. Proseminar.

In addition, the following course is required of all Teaching Assistants and is strongly recommended to all who plan to teach German, especially at the college level: 583. Problems and Methods of Teaching German. Also, *five* courses selected from the Department's offerings of literature courses, including those in medieval literature; the five courses must include at least *one* course in the 18th Century, *one* course in the 19th Century, and *one* course in the 20th Century literature.

## MASTER OF ARTS IN TEACHING (M.A.T.)

The Master of Arts in Teaching degree (M.A.T.) is offered to candidates who are interested in or are already teaching German at the secondary school or community/junior college level. The primary aim of the program is to prepare those who do not have adequate training or classroom teaching experience in the presentation of German, but who hold the B.A. degree, to become effective classroom teachers at the secondary school or community/junior college level. Teachers already professionally qualified in the teaching of German are also encouraged to work for the M.A.T. Applications will be considered and acted upon by the Department of Germanic Languages and Literatures.

**General Requirements:** The M.A.T. degree program consists of two basic parts: (a) academic requirements in the field of German and (b) professional education requirements. The former (a) encompass *at least* 21 credits in courses numbered 500 and upward, as in all M.A. degree programs. For the latter (b) the candidate has a choice between (1) preparation for secondary school teaching and (2) preparation for community/junior college teaching. Both of these alternatives include a teaching practicum, courses necessary for professional certification, and some variable credits (depending upon the candidate's experience and background).

**Secondary School Teaching Option (minimum program).**

- 21 credits in the academic discipline, including German 585 (3) Structure of German, German 720 (3) Advanced Composition and Translation, German 793 (3) Seminar in the Teaching of German, three courses in German literature, one course in Linguistics or a second major language (e.g., French, Spanish, Latin, Russian, Italian).
- 9 Credits in professional education courses (including at least two of these four areas: educational psychology, philosophy of education, methods and materials, and curriculum development; some of these courses may be taken in individual departments other than the School of Education, including German 583 (3) Problems and Methods of Teaching German.
- 9 credits for a semester (or equivalent thereof) of full-time internship or teaching practicum *and* concurrent

## GERMANIC LANGUAGES AND LITERATURES

practicum seminar (German 789). (Teachers already accredited are required to do a project in lieu of the teaching practicum.)

39 credits total

If a student also desires certification in a state other than Massachusetts, he or she may supplement his/her program to meet the particular requirements of that state.

**Community/Junior College Teaching Option (minimum program):**

24 credits in the academic discipline, including German 585 (3) Structure of German, German 720 (3) Advanced Composition and Translation, German 793 (3) Seminar in the Teaching of German, four courses in German literature, one course in Linguistics or a second major language (e.g., French, Spanish, Latin, Russian, Italian).

12 credits in professional education courses (including curriculum/teaching clinic, directed observation, advising and counseling, and philosophy of education).

9 credits for a semester (or equivalent thereof) of full-time internship or teaching practicum *and* concurrent practicum seminar (German 789). (Teachers already accredited are required to do a project in lieu of the teaching practicum.)

45 credits total

**Professional Education Component:** The core of the 18-21 credits of professional education component is the teaching practicum and associated practicum seminar (conducted during the same time interval). The teaching practicum normally involves full-time supervised classroom teaching experience at the appropriate level (secondary or community/junior college) for a period of time sufficient to immerse the candidate fully in the role of classroom teacher. While this is likely to be a full academic semester in one location, shorter periods of time in more than one location are not precluded.

Both the teaching practicum and the practicum seminar, which run concurrently, have the cooperative support of the departmental faculty. Individual faculty members oversee the preparation of teaching units in their speciality and then discuss academically pertinent problems arising from practicum experiences. Overall responsibility for the teaching practicum and practicum seminar rests with the departmental M.A.T. supervisor.

**Eligibility:** Those seeking admission to the program should have a B.A. degree with a major in German, or its equivalent, and must have earned a cumulative average of 3.0 or better in German and of 2.75 or better in their overall undergraduate course of study (reference is to a four-point scale). Candidates are requested to submit a well-considered statement indicating a firm commitment to a career as a teacher of German. The statement may vary in length according to individual needs, but need not exceed three or four typewritten pages. In addition, candidates are requested to arrange for letters of recommendation from at least two teachers who are well acquainted with their recent academic performance. An admission interview may be requested when appropriate. Scores of the Graduate Record Examination Aptitude Test are required by the University.

A maximum of 9 graduate course credits may, upon departmental recommendation, be transferred into the M.A.T. program. However, no more than 6 of these credits can come from either the academic field or the

## GERMANIC LANGUAGES AND LITERATURES

## GRADUATE SCHOOL

professional education component (i.e., to transfer 9 credits, 6 must come from one area and 3 from the other).

Those who may have completed state certification requirements in their undergraduate programs in addition to having earned a B.A. degree in German are also eligible for the M.A.T. program, provided they have met all other requirements and are prepared to undertake the full extent of the teaching practicum. Because of the nature of the program, priority of admission is given to full-time rather than part-time candidates.

*Minor Teaching Fields:* All those preparing for teaching German are strongly urged to prepare themselves in the teaching of another major language. Generally, at least 18 credits of undergraduate and graduate work should be taken in such a language in order to establish competence in a minor teaching field.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

COURSES OPEN TO GRADUATE STUDENTS ONLY  
(for either major or minor credit)

**700. SPECIAL PROBLEMS/INDEPENDENT STUDY.**  
Directed study in some special area of literature or philology. Open to Ph.D. candidates only, except by special permission.  
*Credit, 1-3.*

**701. MIDDLE HIGH GERMAN.**  
Readings in Middle High German literature with an introduction to the grammar.

**702. OLD HIGH GERMAN.**  
Grammar and reading of prose and poetry; an introduction to Old High German dialects.

**703. GOTHIC.**  
Grammar and reading of texts.

**704. OLD NORSE.**  
Grammar and reading of selections from the sagas.

**705. OLD SAXON.**  
Grammar and reading of selections from the *Heliand*.

**710. COMPARATIVE GERMANIC GRAMMAR I**  
(Phonology).  
The sound systems of the various Germanic dialects from a synchronic and diachronic point of view.  
Prerequisites, any two of the following: 701, 702, 703, 704, 705.

**711. COMPARATIVE GERMANIC GRAMMAR II**  
(Morphology).  
The grammatical structure of the various Germanic dialects from a synchronic and diachronic point of view.  
Prerequisite, German 710.

**712. GERMAN DIALECTOLOGY.**  
Modern German dialects, their differentiation and structural analysis.  
Prerequisite, German 701 or 702 or special permission.

**715. THE HEROIC EPIC.**  
A detailed study of *Nibelungenlied* and *Kudrun* with reference to the pre-courtly epic and later *Dietrichsepik*.  
(Offered in alternate years)  
Prerequisite, German 701.

**716. COURTLY LYRIC POETRY.**  
An introduction to the formal study of *Minnesang* and *Spruchdichtung* from the Kurenberger to Konrad von Würzburg with emphasis on Walther von der Vogelweide

and the social and historical context of the period.  
(Offered in alternate years)  
Prerequisite, German 701.

**717. THE COURTLY EPIC.**  
A comprehensive literary analysis of selected epics by Hartmann von Aue, Wolfram von Eschenbach, Gottfried von Strassburg.  
(Offered in alternate years)

**718. NARRATIVE AND DIDACTIC MHG LITERATURE.**  
The didactic narrative from the 11th to the 13th century.  
(Offered in alternate years)  
Prerequisite, German 701.

**720. ADVANCED COMPOSITION AND TRANSLATION.**  
Required of all degree candidates. May be waived for students judged to have native speaking proficiency.

**730. LITERATURE OF THE 15TH AND 16TH CENTURIES.**  
Humanism and Reformation.

**733. 17TH-CENTURY POETRY AND PROSE.**  
Poetry and prose and relevant poetic theories.

**734. 17TH-CENTURY DRAMA.**  
Drama and relevant poetic theories.

**741. FROM ENLIGHTENMENT TO ROCOCO.**  
Literary theory and practice in the first half of the 18th Century.

**742. LESSING.**  
His Literary Theory in the context of his time. His drama.

**743. VON DER EMPFINDSAMKEIT ZUM STURM UND DRANG.**

**749. THE CLASSICAL GOETHE.**  
The major works of Goethe's Weimar period; poetry; drama, fiction.

**750. THE LATER GOETHE.**

**751. GOETHE'S FAUST.**

**752. SCHILLER.**  
Schiller's literary and philosophical works.

**758. EARLY ROMANTICISM.**  
Philosophical background and literary works of the early Romantic movement.

**759. LATER ROMANTICISM.**  
Later development of Romanticism from Brentano to Heine, including the anti-Romantic tendencies of the time.

**763. 19TH-CENTURY POETRY AND PROSE.**  
Poetry by Heinrich Heine, Eduard Mörike, Annette von Droste-Hülshoff a.o. and of prose by Heinrich Heine and the writers of Biedermeier and Das Junge Deutschland.

**764. 19TH-CENTURY DRAMA.**  
Kleist, Grillparzer, Büchner, Grabbe, Hebbel.

**765. LITERATURE OF REALISM.**  
From Gotthelf to Fontane.

**771. 20TH-CENTURY POETRY I.**  
Emphasis on George, Hofmannsthal, Rilke.

**772. 20TH-CENTURY POETRY II.**  
Emphasis on expressionist and post-expressionist poetry.

**773. 20TH-CENTURY PROSE I.**  
The early Thomas Mann and his generation.

**774. 20TH-CENTURY PROSE II.**  
New trends of fiction after the First World War.



## UNIVERSITY OF MASSACHUSETTS

775. 20TH-CENTURY DRAMA.  
From Wedekind to Brecht.

777. BIBLIOGRAPHY AND METHODOLOGY.  
An introduction to tools and methods of research.

778. STRUCTURE AND HISTORY OF GERMAN VERSE

779. POST-WORLD WAR II GERMAN LITERATURE.

780. PROSEMINAR.  
Interpretation of texts and introduction to critical terminology.

782. SPECIAL TOPICS IN PHILOLOGY AND MEDIEVAL STUDIES.

783. SPECIAL TOPICS IN THE LITERATURE OF CLASSICISM.

784. SPECIAL TOPICS IN THE LITERATURE OF ROMANTICISM.

785. SPECIAL TOPICS IN THE LITERATURE OF THE 19TH CENTURY.

786. SPECIAL TOPICS IN THE LITERATURE OF THE 20TH CENTURY.

787. HISTORY OF AESTHETIC THEORIES IN GERMANY

General trends in the history of aesthetics. Discussion of major works since Opitz.

788. HISTORY AND PROBLEMS OF LITERARY CRITICISM.

790. SEMINAR IN LITERATURE

791. SEMINAR IN PHILOLOGY.

792. SEMINAR IN MEDIEVAL LITERATURE.

900. DOCTORAL DISSERTATION. *Credit, 15.*

### COURSE NOT FOR MAJOR CREDIT

409, 410. GRADUATE READING COURSE.  
For graduate students preparing for the M.A. or Ph.D. reading examination. No previous knowledge of German required. *No credit.*

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

583. PROBLEMS AND METHODS OF TEACHING GERMAN.

Various methods of teaching a foreign language based on recent developments in applied linguistics and programmed learning.  
Prerequisite, advanced proficiency in German.

584. HISTORY OF GERMAN.  
Introduction to the history of the German language.

585. STRUCTURE OF GERMAN.  
An introduction to the principles of linguistics and the structure of the German language.

### COURSE OPEN TO STUDENTS IN THE M.A.T. PROGRAM.

German 789. PRACTICUM AND SEMINAR IN THE TEACHING OF GERMAN. *Credit, 9*

## HISTORY

### History

#### GRADUATE FACULTY

GERALD W. MCFARLAND, *Professor and Chairman of the Department of History*, B.A., California at Berkeley, 1960; M.A., Columbia, 1964; Ph.D., 1965.

ROLAND SARTI, *Associate Professor and Graduate Program Director*, B.A., City College of New York, 1960; M.A., Rutgers, 1962; Ph.D., 1967.

DEAN ALBERTSON, *Professor*, B.A., California at Berkeley, 1942; M.A., 1947; Ph.D., Columbia, 1955.

HUGH F. BELL, *Associate Professor*, B.A., Princeton, 1941; J.D., Michigan, 1945; Ph.D., Cornell, 1970.

JOYCE A. BERKMAN, *Assistant Professor*, B.A., California at Los Angeles, 1958; M.A., Yale, 1959; Ph.D., 1967.

WINFRED E. A. BERNHARD, *Professor*, B.S., Harvard, 1942; M.A., Columbia, 1948; Ph.D., 1961.

PAUL S. BOYER, *Professor*, B.A., Harvard, 1960; M.A., 1961; Ph.D., 1966.

MILTON CANTOR, *Professor*, B.A., Brooklyn, 1947; M.A., Pennsylvania, 1948; Ph.D., Columbia, 1954.

MIRIAM U. CHRISMAN, *Professor*, B.A., Smith, 1941; M.A., American University, 1948; M.A., Smith, 1955; Ph.D., Yale, 1962.

WILLIAM A. DAVIS, *Professor*, B.A., Colgate, 1935; M.A., Harvard, 1938; Ph.D., 1956.

MARIO S. DEPILLIS, *Professor*, B.A., Chicago, 1952; M.A., 1954; Ph.D., Yale, 1961.

FRED W. DRAKE, *Associate Professor*, B.A., Stanford, 1961; M.A., 1963; M.A., Harvard, 1965; Ph.D., 1971.

HAROLD J. GORDON, JR., *Professor*, B.A., Richmond, 1940; M.A., Yale, 1948; Ph.D., 1953.

LOUIS S. GREENBAUM, *Professor*, B.A., Wisconsin, 1950; M.A., 1951; Ph.D., Harvard, 1955.

ROBERT W. GRIFFITH, *Associate Professor*, B.A., DePauw, 1962; M.A., Wisconsin, 1964; Ph.D., 1967.

ROBERT A. HART, *Professor*, B.A., Indiana, 1954; M.A., 1959; Ph.D., 1964.

JOSEPH M. HERNON, JR., *Associate Professor*, B.A., Catholic University, 1959; Ph.D., Trinity College, Dublin, 1963.

VINCENT HARDI, *Professor*, B.A., Rutgers, 1952; M.A., Harvard, 1953; Ph.D., 1958.

WILLIAM M. JOHNSTON, *Professor*, B.A., Harvard, 1955; Ph.D., 1965.

ROBERT E. JONES, *Associate Professor*, B.A., Lafayette, 1963; Ph.D., Cornell, 1968.

GEORGE E. KIRK, *Professor*, B.A., Cambridge, 1932; Diploma in Classical Archaeology, 1933; M.A., 1936.

BRUCE G. LAURIE, *Assistant Professor*, B.A., Rutgers, 1965; M.A., Pittsburgh, 1967; Ph.D., 1971.

ARCHIBALD R. LEWIS, *Professor*, B.A., Princeton, 1936; M.A., 1939; Ph.D., 1940.

JANE M. LOY, *Assistant Professor*, B.A., DePauw, 1962; M.A., Wisconsin, 1964; Ph.D., 1969.

## HISTORY

ROBERT H. MCNEAL, *Professor*, B.A., Yale, 1952; M.A., Columbia, 1954; Ph.D., 1958.

RICHARD H. MINEAR, *Professor*, B.A., Yale, 1960; M.A., Harvard, 1962; Ph.D., 1968.

STEPHEN NISSENBAUM, *Associate Professor*, B.A., Harvard, 1961; M.A., Columbia, 1963; Ph.D., Wisconsin, 1968.

STEPHEN B. OATES, *Professor*, B.A., Texas, 1958; M.A., 1960; Ph.D., 1968.

STEPHEN E. PELZ, *Associate Professor*, B.A., Johns Hopkins, 1964; M.A., Harvard, 1966; Ph.D., 1971.

ROBERT A. POTASH, *Professor*, B.A., Harvard, 1942; M.A., 1947; Ph.D., 1953.

HOWARD H. QUINT, *Professor*, B.A., Yale, 1940; M.A., Stanford, 1942; Ph.D., Johns Hopkins, 1947.

CHARLES W. REARICK, *Associate Professor*, B.A., College of Idaho, 1964; M.A., Harvard, 1965; Ph.D., 1968.

LEONARD L. RICHARDS, *Associate Professor*, B.A., California at Berkeley, 1956; M.A., 1961; Ph.D., California at Davis, 1968.

NEAL SHIPLEY, *Assistant Professor*, B.S., Groves City College, 1959; M.A., Harvard, 1960; Ph.D., 1967.

MARVIN SWARTZ, *Associate Professor*, B.A., Princeton, 1963; M.A., Yale, 1964; Ph.D., 1969.

PHILIP SWENSON, *Assistant Professor*, B.A., San Diego State, 1966; M.A., 1967; Ph.D., 1970; Ph.D., University of Washington, 1971.

JACK TAGER, *Associate Professor*, B.A., Brooklyn, 1958; M.A., California at Berkeley, 1959; Ph.D., Rochester, 1965.

JACK M. THOMPSON, *Associate Professor*, B.A., South Carolina, 1949; M.A., 1953; Ph.D., 1958.

JOHN VAN STEENBERG, *Assistant Professor*, B.S., University of Indiana, 1944; M.A., University of Chicago, 1947; Ph.D., Harvard, 1957.

RONALD D. WARE, *Associate Professor*, B.A., Cincinnati, 1950; M.S., Wisconsin, 1956; Ph.D., 1960.

ROBERT WHITE, *Assistant Professor*, B.A., Haverford, 1963; M.A., Texas, 1966; Ph.D., 1972.

FRANKLIN B. WICKWIRE, *Professor*, B.A., Hanover, 1952; M.A., Indiana, 1956; Ph.D., Yale, 1961.

MARY B. WICKWIRE, *Associate Professor*, B.A., Wellesley, 1956; M.A., Yale, 1957; Ph.D., 1963.

DAVID WYMAN, *Professor*, B.A., Boston, 1951; M.Ed., Plymouth Teachers College, 1961; M.A., Harvard, 1962; Ph.D., 1966.

## GRADUATE SCHOOL

### GRADUATE PROGRAMS IN HISTORY

More complete information on graduate study in History may be found in the Departmental statement, *Graduate Program in History*, available from the History office. Because requirements are currently under revision, students are advised to consult the most recent edition of this statement.

### THE DOCTOR OF PHILOSOPHY DEGREE PROGRAM

The Department of History offers doctoral work in four major areas of history: Europe, Great Britain, United States and Latin America. Each of these areas is divided into various sub-fields.

On admission as a Ph.D. candidate each student is assigned a Guidance Committee to advise and approve the choice of doctoral fields appropriate to the student's major interests. The candidate chooses an area of specialization, and within this area a major field.

*Course work:* Candidates without previous graduate training: 15 courses including four graduate seminars. Candidates with an M.A. from another institution: eight courses at the 700-800 series including two graduate seminars.

*Language proficiency:* Candidates must pass the departmental examination demonstrating reading ability in one foreign language. Students specializing in areas for which knowledge of more than one foreign language is normal for scholarly work must pass the examination in the relevant languages.

*Preliminary Comprehensive Examination:* Candidates must pass the general examination in four fields (major area of specialization and three supporting fields). At least two but not more than three are in the candidates area of specialization. With the approval of the major adviser and of the departmental Graduate Program Director, the candidate may offer one field in a department other than history.

*Dissertation:* A dissertation is required. Candidates must submit and defend in an oral examination an acceptable dissertation on a topic approved by the candidate's Dissertation Committee. Doctoral degree candidates shall complete *all* requirements within six calendar years of initial registration to that degree program (if admitted *without* the Master's degree or its equivalent) or within four calendar years of initial registration (if admitted *with* the Master's degree or its equivalent).

*Residence:* Minimum: full-time residence at the University of Massachusetts for one academic year.

### THE MASTER OF ARTS DEGREE PROGRAM

Each M.A. candidate selects a major field of concentration from those offered by the History Department. The M.A. fields offered include the following: United States, Latin America, Europe, Great Britain, Near and Middle East, East Asia, History of Science. Selection of the student's adviser is based on the choice of a field of concentration.

*Language proficiency:* All M.A. candidates must demonstrate a reading knowledge in one foreign language. U.S. history specialists may substitute proficiency in an alternative tool of research.

*Course work:*

1) Each student must complete eight courses of which at least six must be in the 700-800 series.

## UNIVERSITY OF MASSACHUSETTS

## HISTORY

2) Students may write a Master's thesis for 8 credits as a substitute for two courses in the 700 series, one of which may be a seminar.

3) A minimum of two graduate seminars must be completed and one course in historiography.

4) Four courses is the normal permissible program per semester

**Examination:** The candidate must pass an oral examination on his primary field of interest to be conducted by a three member examining committee. The student is expected to complete his program within a three-year period from initial registration.

### THE MASTER OF ARTS PROGRAM FOR TEACHERS

This M.A. degree program emphasizes the special needs of secondary school teachers; it stresses breadth of knowledge rather than concentration, and critical reading more than the development of research techniques.

The student is required to complete eight courses at least four of which must be in the 700 to 800 level. Each student's program is planned with reference to preparation for teaching. The student must complete a semester course entitled "The Teaching of History," and may include three courses in associated disciplines at the discretion of the adviser.

Examinations in foreign languages are not required of students in this program, yet admission to certain courses in the history of non-English speaking countries necessitates a competence in the relevant language.

Nine credits is the minimum program per semester. The student should expect to complete his or her program within a three-year period.

A candidate must pass an oral examination based, in consultation with the adviser, upon an appropriate range of his or her graduate courses including "The Teaching of History." Three members of the graduate faculty will conduct the examination. Transfer to the regular Master of Arts program may be made with the approval of the department.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

**700. SPECIAL PROBLEMS IN HISTORY.**  
Directed research and writing for qualified students.  
Prerequisite, permission of instructor. *Credit, 1-6.*

**701. EUROPEAN HISTORIOGRAPHY TO THE ENLIGHTENMENT.**  
Critical evaluation of the techniques and ideas of major historians and influential schools of historical interpretation from the Greeks through the Renaissance.  
*Credit, 4. Mr. Ware.*

**702. EUROPEAN HISTORIOGRAPHY; THE ENLIGHTENMENT TO THE PRESENT.**  
Techniques and ideas of major historians and influential schools of historical interpretation, and the relation of historiography to the intellectual and political history of modern Europe.  
*Credit, 4. Mr. Greenbaum. Mr. Johnston.*

**703. AMERICAN HISTORIOGRAPHY THROUGH THE CIVIL WAR.**  
Interpretations of major themes as developed in the works of leading historians.  
*Credit, 4. Mr. Davis.*

**704. AMERICAN HISTORIOGRAPHY; 1865 TO THE PRESENT.**  
Interpretations of major themes as developed in the works of leading historians.  
*Credit, 4. Mr. McFarland.*

**705. PHILOSOPHY OF HISTORY.**  
The "philosophy of history" both as epistemology and as a method of explanation, and a comparison of the aims of history and the sciences. Analysis of the nature of history: the difference between truth and fact, the possibility of objectivity, and the theory of historical explanation. Major historians in the field are read, from Thucydides and Augustine to Croce and Toynbee.  
*Credit, 4. Mr. Johnston.*

**706. LATIN AMERICAN HISTORIOGRAPHY.**  
Techniques and interpretations developed by representative historians from the conquest to the present.  
Prerequisite, reading knowledge of Spanish or Portuguese, or permission of instructor.  
*Credit, 4. Mr. Hanke.*

**707. LATE MEDIEVAL AND RENAISSANCE PALAEOGRAPHY.**  
Instruction in reading the scripts of original documents. Required of Ph.D. specialists in these fields.  
*Credit, 4. Mr. Haldi.*

**708. TOPICS IN ANCIENT HISTORY I.**  
The Near East and Greece. Papers may obtain seminar credit with instructor's approval.  
*Credit, 4. Mr. Kirk.*

**709. TOPICS IN ANCIENT HISTORY II.**  
Early Italy and Rome, to the end of the Empire in the West. Papers may obtain seminar credit with instructor's approval.  
*Credit, 4. Mr. Kirk.*

**710. TOPICS IN HISTORY.**  
Readings, discussions, reports.  
*Credit, 4*

**711. TOPICS IN EARLY MEDIEVAL HISTORY.**  
Continuity between ancient and medieval civilization.  
Prerequisites, working knowledge of Latin and one modern language (German, French, Italian) or permission of instructor.  
*Credit, 4. Mr. Lewis. Mr. Ware.*

**712. TOPICS IN THE AGE OF THE RENAISSANCE AND REFORMATION.**  
European culture between 1400 and 1600. A reading knowledge of a modern European language is generally required.  
*Credit, 4. Mr. Haldi.*

**713. TOPICS IN THE AGE OF THE ENLIGHTENMENT.**  
The movement of ideas in Atlantic civilization during the 18th century. The mind and writings of representative European and American thinkers. Emphasis on politics, religion, science, literature and the arts.  
*Credit, 4. Mr. Greenbaum.*

**714. TOPICS IN TUDOR AND STUART ENGLAND.**  
Selected aspects of the Tudor age; the interplay of social, and political factors involved in the Stuart Revolution. Constitutional developments emphasized.  
*Credit, 4. Mr. Shipley.*

**715. TOPICS IN RECENT EUROPEAN HISTORY.**  
Basic developments in diplomatic, political, social, and economic history since 1800. Emphasis on organic growth and change.  
*Credit, 4. Mr. Gordon.*

**716. TOPICS IN WORLD WAR II AND AFTERMATH.**  
Pre-nuclear total war in its military development and its political, economic, and social ramifications in modern Western society; the postwar settlements and their effects.  
*Credit, 4. Mr. Gordon.*

**717. TOPICS IN THE RECENT SOCIAL HISTORY OF EUROPE.**  
The social changes resulting from the industrialization of Europe since 1815 and their relationship to economic and political developments. The methods and materials needed for effective work in recent social history. A series of short problems illustrating proper utilization of the sources.  
*Credit, 4. Mr. Gordon.*



## HISTORY

## GRADUATE SCHOOL

### 718. TOPICS IN NINETEENTH-CENTURY INTELLECTUAL HISTORY.

Selected major currents in European thought since the French Revolution, their origins, development, and influence. Reading knowledge of French or German is desirable.

*Credit, 4. Mr. Johnston.*

### 719. PROBLEMS IN BRITISH IMPERIAL HISTORY SINCE 1783.

Aspects of such general topics as the problems of imperial government after the American Revolution, the Durham Report and the growth of the dominions, the difficulties and effect of implantation of British institutions in Asia and Africa, the lessening of British control and the Statute of Westminster, and the political and economic importance of the Commonwealth in world affairs.

*Credit, 4. Mr. Wickwire, Mrs. Wickwire.*

### 720. TOPICS IN BRITAIN IN THE 19TH CENTURY.

Central themes and topics. Emphasis on the history of thought in its relation to political, economic, and social developments.

*Credit, 4. Mr. Hernon.*

### 721. PROBLEMS IN RUSSIAN HISTORY.

Russia in the 19th and 20th centuries. Emphasis on Russian and Soviet historiography. Intensive reading and careful analyses of selected topics.

*Credit, 4. Mr. McNeal, Mr. Jones.*

### 722. TOPICS IN MODERN SPANISH HISTORY.

Spanish history from the end of the reign of Philip II to the end of the Spanish Civil War.

*Credit, 4.*

### 730. TOPICS IN EARLY AMERICAN HISTORY.

Colonial America from discovery and settlement of the New World through the Federalist era.

*Credit, 4. Mr. Bernhard, Mr. Bell.*

### 731. TOPICS IN THE ERA OF THE CONFEDERATION AND THE CONSTITUTION.

The formative years of the American nation; the evolution of federal and state constitutions; basic political issues and conflicts; the pattern of economic and social development.

*Credit, 4. Mr. Davis, Mr. Bernhard.*

### 732. TOPICS IN THE NATIONAL PERIOD.

A reading course. Basic features of American political, social, and economic history from the rise of Jeffersonianism to the Civil War.

*Credit, 4. Mr. Cantor, Mr. Richards.*

### 733. TOPICS IN THE AMERICAN CIVIL WAR ERA.

Analysis and interpretation of slavery and abolition, Southern nationalism, the breakdown of national parties, causes of the War, wartime politics and the War's impact.

*Credit, 4. Mr. Oates.*

### 734. TOPICS IN THE GILDED AGE.

Investigation of national re-unification, Grantism, dead center politics, genteel reform, the new industrialism and business leadership, labor and agrarian problems.

*Credit, 4. Mr. McFarland.*

### 735. TOPICS IN THE PROGRESSIVE ERA OF THE UNITED STATES.

Emphasis on the political, social, economic, and cultural aspects of the Progressive Era, and an analysis of the interpretations of historians and others.

*Credit, 4. Mr. Tager, Mr. Thompson.*

### 736. TOPICS IN AMERICAN DIPLOMATIC HISTORY.

Readings in the primary and secondary sources for the study of important phases in American diplomacy.

*Credit, 4. Mr. Hart.*

### 737. TOPICS IN THE UNITED STATES BETWEEN THE WORLD WARS.

Major issues in American political, social, and economic life between the two World Wars.

*Credit, 4. Mr. Quint, Mr. Wyman.*

### 738. TOPICS IN UNITED STATES INTELLECTUAL HISTORY.

Specific aspects of such general topics as the American adaptation of the European heritage, the growth of the concept of Americanism, the emergence of patrician leadership, the achievement of realistic democracy, the triumph of nationalism, the assertion of individualism in a corporate society, and the scientific-humanistic culture conflict.

*Credit, 4. Mr. Quint, Mr. Cantor, Mr. Boyer.*

### 739. TOPICS IN MASSACHUSETTS HISTORY.

Development of the Commonwealth and its relationship to regional and national institutions and thought from early colonial times to the present. Abundant primary and secondary source materials. A foundation for further research.

*Credit, 4. Mr. Nissenbaum.*

### 740. TOPICS IN UNITED STATES URBAN HISTORY.

The origins of the modern American city and the complex problems engendered by large-scale urbanization.

*Credit, 4. Mr. Tager.*

### 741. TOPICS IN AMERICAN SOCIAL HISTORY.

A behavioral approach to the history of American society: the family, religion, ethnicity, socialization of children, explanations of social change etc.

*Credit, 4. Mr. DePillis.*

### 745. TOPICS IN MODERN AND CONTEMPORARY SOUTH AMERICA.

Political, economic, social, and ideological forces in the history of Latin America since independence. Reading knowledge of Spanish or Portuguese desirable.

*Credit, 4. Mr. Potash.*

### 748. TOPICS IN ISLAMIC AND MODERN MIDDLE-EASTERN HISTORY AND POLITICS.

Readings in primary and secondary sources for the study of important aspects of Islamic and Middle Eastern development.

Prerequisite, permission of instructor.

*Credit, 4. Mr. Biddle, Mr. Kirk.*

### 750. RESEARCH SEMINAR IN HISTORY.

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4.*

### 751. SEMINAR IN MEDIEVAL HISTORY.

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4. Mr. Lewis, Mr. Ware.*

### 752. SEMINAR IN RENAISSANCE AND REFORMATION.

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4 each semester; total credit, 4. Mr. Ilardi.*

### 753. SEMINAR IN THE ENLIGHTENMENT.

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4. Mr. Greenbaum.*

### 754. SEMINAR IN 18TH-CENTURY BRITAIN.

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4. Mr. Wickwire.*

### 755. SEMINAR IN MODERN ENGLISH HISTORY.

Research on selected topics, 1890-1940.

Prerequisite, permission of instructor.

*Credit, 4. Mr. Hernon.*

### 756. SEMINAR IN MODERN GERMANY.

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4. Mr. Gordon.*

### 757. SEMINAR IN MODERN FRANCE.

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4. Mr. Rearick.*

## UNIVERSITY OF MASSACHUSETTS

### 758. SEMINAR IN RUSSIAN HISTORY

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4.* Mr. Jones, Mr. McNeal.

### 759. EUROPEAN DIPLOMACY SINCE 1915.

Training in historical research and an introduction to the relationships among European nations in a critical period.

Prerequisite, permission of instructor.

*Credit, 4.* Mr. Swartz.

### 761. SEMINAR IN EARLY AMERICAN HISTORY.

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4.* Mr. Bell, Mr. Bernhard

### 762. SEMINAR IN THE AGE OF JACKSONIAN DEMOCRACY.

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4.* Mr. Richards.

### 763. SEMINAR IN THE CIVIL WAR AND RECONSTRUCTION.

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4.* Mr. Oates

### 764. SEMINAR IN THE WESTWARD MOVEMENT OF THE UNITED STATES

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4.* Mr. DePillis, Mr. Davis.

### 765. SEMINAR IN THE PROGRESSIVE ERA IN THE UNITED STATES.

Training in historical research.

Prerequisite, permission of instructor. *Credit, 4.* Mr. Quint

### 766. SEMINAR IN THE UNITED STATES BETWEEN THE WORLD WARS.

Training in historical research.

Prerequisite, permission of instructor. *Credit, 4.* Mr. Quint

### 767. SEMINAR IN AMERICAN DIPLOMATIC HISTORY

Training in historical research.

Prerequisite, permission of instructor. *Credit, 4.* Mr. Hart

### 768. SEMINAR IN AMERICAN INTELLECTUAL HISTORY TO THE CIVIL WAR.

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4.* Mr. Cantor.

### 769. SEMINAR IN AMERICAN INTELLECTUAL HISTORY SINCE THE CIVIL WAR.

Training in historical research.

Prerequisite, permission of instructor. *Credit, 4.* Mr. Quint.

### 770. SEMINAR IN THE COLONIAL HISTORY OF SOUTH AMERICA.

Training in historical research.

Prerequisite, permission of instructor. *Credit, 4.*

### 771. SEMINAR IN ARGENTINE HISTORY.

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4.* Mr. Potash.

### 772. SEMINAR IN MEXICAN HISTORY.

Training in historical research.

Prerequisite, permission of instructor.

*Credit, 4.* Mr. Potash.

### 780. SEMINAR IN ISLAMIC AND MODERN MIDDLE EASTERN HISTORY AND POLITICS.

Training in historical research.

Prerequisite, permission of instructor.

A reading knowledge of a European language is highly desirable. *Credit, 4.* Mr. Biddle, Mr. Kirk.

## HISTORY

### 800. MASTER'S THESIS.

*Maximum credit, 8.*

### 900. DOCTORAL DISSERTATION

*Credit, 18*

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

#### 500. THE ANCIENT WORLD TO 500 B.S.

From the origins of human society to the Greeks' confrontation with the Persian Empire.

Mr. Kirk.

#### 501. THE ANCIENT WORLD: PERICLES TO CONSTANTINE.

The successive assertions and breakdowns of leadership in the Greek and Roman world.

Mr. Kirk

#### 502. EARLY MIDDLE AGES (300-1100).

Spread of Christianity; pagan and early Christian culture; Germanic kingship; the Carolingian world; early feudalism; monasticism and ecclesiastical centralization.

Mr. Lewis, Mr. Ware.

#### 503. THE LATER MIDDLE AGES (1100-1350).

Revival of towns and commerce; the growth and development of the feudal monarchies and ecclesiastical authority; rise of secularism.

Mr. Lewis, Mr. Ware

#### 505. RENAISSANCE AND REFORMATION: 1300-1600.

The changes in European thought and institutions during the development of Humanism.

Mr. Hardi

#### 506. RENAISSANCE AND REFORMATION: 1300-1600.

The impact on the late Renaissance of the Protestant and Catholic Reformations.

Mr. Hardi

#### 507. EUROPE IN THE ENLIGHTENMENT: 1685-1789

Civilization of Western Europe in the 18th century, its social milieu, intellectual setting, institutional forces, religious tendencies, aesthetic contributions, and the growth of the revolutionary spirit.

Mr. Greenbaum.

#### 508. THE FRENCH REVOLUTION AND NAPOLEON.

Political change in Europe from the Old Regime and the French Revolution to the fall of Napoleon.

Mr. Greenbaum.

#### 509. HISTORY OF EUROPE: 1815-1870.

Major developments in the internal and international affairs of the European states from the Congress of Vienna to the Franco-German War.

Mr. Reaick

#### 510. EUROPE: 1870-1918.

Internal developments of the principal countries; conditions and diplomacy which led to the World War; military and diplomatic history of the war years.

Mr. vanSteenberg.

#### 511. EUROPE SINCE 1918.

Major developments in the internal and international affairs of the European states since World War I.

Mr. vanSteenberg.

#### 512. EUROPEAN INTELLECTUAL HISTORY IN THE 19TH CENTURY.

Chief intellectual currents in Europe; romanticism, liberalism, religious revival, socialism, Darwinism, racism and mass culture.

Mr. Johnston.

#### 513. EUROPEAN INTELLECTUAL HISTORY IN THE 20TH CENTURY.

Philosophical, academic, literary, aesthetic, political and popular currents since 1900.

Prerequisite, permission of instructor. Mr. Johnston.

#### 514 (I), 515 (II). THE HISTORY OF RUSSIA.

Political, economic, social, and intellectual development of Russia. Either semester may be elected independently.

*Credit, 3 each semester.* Mr. Jones, Mr. McNeal.

## HISTORY

### 516. THE RUSSIAN REVOLUTION.

Intensive study of the origins, course, and impact of the Bolshevik Revolution. Mr. McNeal.

### 517. SOVIET RUSSIA.

Major social, political, intellectual developments, and the international relations of Soviet Russia since the Bolshevik Revolution. Mr. McNeal.

### 518. EARLY MODERN GERMANY.

From the end of the Thirty Years' War to the collapse of the Napoleonic hegemony. Mr. Gordon.

### 519. THE HISTORY OF MODERN GERMANY.

The evolution and development of Germany since the Congress of Vienna; emphasis on diplomatic, political, military and social-economic trends and problems. Mr. Gordon.

### 520. MODERN SCANDINAVIA.

The major issues of domestic and foreign politics of the states of Northern Europe in the 19th and 20th centuries. Mr. vanSteenberg.

### 521. FRANCE SINCE 1789.

Selected formative political crises from 1789 to the present and their settings in the economic, social, and intellectual life of modern France. Mr. Rearick.

### 522. IMPERIAL SPAIN: 1450-1810.

Early modern Spain from the time of Ferdinand and Isabella to the outbreak of the Spanish-American wars for independence, including the Habsburg and early Bourbon periods. Mr. White.

### 524. EUROPEAN DIPLOMATIC HISTORY: 1870-1914.

The internal politics and foreign policies of the major European powers. Emphasis on the themes of nationalism, liberalism, alliance systems, and the origins of World War I. Mr. Swartz.

### 525. EUROPEAN DIPLOMATIC HISTORY: 1914-1956.

The internal politics and foreign policies of the major European powers. Emphasis on the importance of World War I, the polarization of national and international politics; the origins, course, and aftermath of World War II, and the post-war world. Mr. Swartz.

### 526 (I), 527 (II). MILITARY HISTORY OF MODERN EUROPE.

Development of European military theory and practice. First semester, Napoleonic era to 1914; second semester, 1914 to the present. Mr. Gordon.

### 528. 17TH-CENTURY EUROPE.

Europe from the Wars of the Counter-Reformation to the Glorious Revolution. Civilization of the Baroque in its social, political, economic, religious and intellectual settings. Mr. Greenbaum.

### 529. SOCIAL HISTORY OF EARLY MODERN EUROPE.

The social institutions of Europe as they changed from a system of feudal organization to pre-industrial society, including the evolution of the town to the city, the changing role of the church and agrarian life, and the development of an intellectual class. Mrs. Chrisman.

### 530. HISTORY OF MODERN ITALY.

Survey of modern Italy from the origins of the Risorgimento in the 18th century to the "opening to the left" of the 1960's, with particular reference to domestic problems after the unification, to Italian foreign policy up to the Second World War, and to the rise and consolidation of fascism. Mr. Sarti.

### 531 (I), 532 (II). ENGLISH HISTORY.

Economic, social, and cultural influences, as well as constitutional development. Either semester may be elected independently. Credit, 3 each semester. Mr. Wickwire, Mrs. Wickwire.

## GRADUATE SCHOOL

### 533. MEDIEVAL ENGLAND.

England from the fifth to the fifteenth century, with attention to the Anglo-Saxon period, the Norman conquest, and the evolution of government to the accession of the Tudors. Mr. Ware.

### 534 (I), 535 (II). TUDOR-STUART ENGLAND: 1485-1688.

Selected aspects of the constitutional, social, intellectual, and imperial history of England in this period. Either semester may be elected independently. Credit, 3 each semester. Mr. Shipley.

### 536. BRITAIN IN THE 18TH CENTURY.

Selected aspects of social, intellectual, imperial, and constitutional history including the Acts of Union. Impact of the Industrial and French Revolutions. Mr. Wickwire, Mrs. Wickwire.

### 537 (I), 538 (II). MODERN BRITAIN.

Selected topics on the political, social, and intellectual development of Britain in the nineteenth and twentieth centuries. Either semester may be elected independently. Credit, 3 each semester. Mr. Hernon, Mrs. Berkman.

### 539. HISTORY OF THE BRITISH EMPIRE AND COMMONWEALTH SINCE 1783.

Evolution of British imperial policy; growth of the Dominions, the Commonwealth, and the dependent Empire; role of the Empire in world politics. Mr. Wickwire, Mrs. Wickwire.

### 540 (I), 541 (II). SOCIAL HISTORY OF EUROPE SINCE THE FRENCH REVOLUTION.

Analysis of social classes, their rise, alteration, and fall. Interrelationships of political, economic, and social developments. Mr. Gordon, Mr. Sarti.

### 601. HISTORY OF ARGENTINA 19TH, 20TH CENTURIES.

Argentina since the 18th century. Attention to political, social, and economic change and, in the 20 century, to the growing importance of labor and the military in politics. Mr. Potash.

### 602. THE HISTORY OF MEXICO.

Mexico from the end of the 18th century to the present. Emphasis on political, economic, and social developments. Mr. Potash.

### 603. THE CARIBBEAN.

The Caribbean as a focus of conflict and adjustment from the 15th century to the present. Mrs. Loy.

### 604. HISTORY OF GRAN COLOMBIA.

Colombia, Venezuela, and Ecuador from colonial settlement to the present. Mrs. Loy.

### 605. HISTORY OF THE ANDEAN REPUBLICS.

Peru, Bolivia, and Chile from the late colonial period to the present. Emphasis on political, social and economic developments; particular attention to institutions.

### 607. THE HISTORY OF THE PORTUGUESE EMPIRE.

A survey of the colonial empire Portugal created in Morocco, West Africa, Mozambique, India, Brazil, and the Far East — from the capture of Ceuta in 1415 until Portugal recognized the independence of Brazil in 1825. Comparative treatment of economic affairs, political institutions, race relations, and cultural developments. Mr. White.

### 608. THE HISTORY OF BRAZIL: 1822-1970.

A general view of the cultural, economic, and political development of Brazil since 1822. How the largest and most populous nation in Latin America has become a significant power. Mr. White.

### 616. AMERICAN COLONIAL HISTORY TO 1763.

Discovery and exploration, early European settlements, systems of political and economic control, religious and intellectual development. Anglo-French rivalry. Mr. Bernhard, Mr. Bell.



## UNIVERSITY OF MASSACHUSETTS

617. **THE AMERICAN REVOLUTIONARY ERA.**  
Coming of the Revolution; War for Independence; evolution of American federalism. Mr. Bernhard, Mr. Bell.

618. **THE EARLY NATIONAL PERIOD, 1789-1828.**  
Development of the United States in its formative years, emphasizing political, intellectual, and diplomatic factors. Mr. Bernhard.

619. **JACKSONIAN AMERICA.**  
Political, economic, and social developments in the period before the Civil War. Mr. Richards.

620. **CIVIL WAR.**  
Debate over slavery, political party conflicts, the secession crisis, conduct of the war, political problems during the war. Mr. Oates.

621. **RECONSTRUCTION ERA.**  
Problems of the nation's reunification after the Civil War. Mr. Swenson.

622. **THE GILDED AGE.**  
The emergence of modern political issues during the final decades of the 19th century. Emphasis on the role of industrialization, corporate consolidation, urban growth, and labor, agrarian and genteel protest. Mr. McFarland.

624. **THE PROGRESSIVE AGE (1900-1920).**  
The political response to the changing economic and social conditions in American life. Mr. Thompson, Mr. Tager.

625. **THE UNITED STATES BETWEEN THE WORLD WARS.**  
American political, economic, and intellectual life between the two World Wars. Mr. Griffith, Mr. Wyman.

626 (I), 627 (II). **HISTORY OF AMERICAN THOUGHT AND CULTURE.**  
The basic strands of American thought and their reflection in American culture. First semester deals with the period before 1865. Either semester may be elected independently. Mr. Cantor, Mr. Boyer, Mr. Nissenbaum.

628. **UNITED STATES CONSTITUTIONAL HISTORY TO THE CIVIL WAR.**  
Origins and development of American constitutionalism from the 17th century to the outbreak of sectional armed conflict. Mr. Cantor.

629. **UNITED STATES CONSTITUTIONAL HISTORY FROM THE CIVIL WAR TO THE PRESENT.**  
Evolution of constitutional power in modern America. Mr. Cantor.

630 (I), 631 (II). **SOCIAL HISTORY OF THE UNITED STATES.**  
The evolving status of individuals and groups and problems of migration, livelihood, urbanization, and social conflict. Either semester may be selected independently. Mr. DePillis.

632. **THE SOUTH IN AMERICAN HISTORY.**  
From early settlement to contemporary regional problems. Mr. Thompson.

633. **HISTORY OF AMERICAN WESTWARD EXPANSION: 1763-1893.**  
Advance of settlement from the Appalachians to the Pacific and the influence of the frontier upon social, economic, and political conditions. Mr. Davis, Mr. Oates.

634 (I), 635 (II). **DIPLOMATIC HISTORY OF THE UNITED STATES.**  
Development of American foreign relations, 1776 to the present. Either semester may be elected independently. Mr. Hart, Mr. Pelz.

636. **HISTORY OF THE AMERICAN LABOR MOVEMENT.**  
Evolution of the trade unionism in American life from late

## HOME ECONOMICS

18th century origins through post-Civil War developments to the present. Critical evaluation of changes in labor history. Mr. Laurie.

637. **THE CITY IN THE MODERN UNITED STATES.**  
The industrial city and the full-scale urbanization of the modern United States. The effect of city life upon the social, political, and economic institutions of America. Emphasis on the historical origins of the problems of modern urban existence. Mr. Tager.

639. **UNITED STATES SINCE PEARL HARBOR**  
Emphasis on political, economic, and social currents since World War II. Mr. Griffith, Mr. Wyman.

640. **CIVILIZATION OF ISLAM I.**  
The development of Islam from theocracy to empire with emphasis on the evolution of Islamic law and theology, Arabic literature, Persian literature, Sufism, and Shiism from 500 A.D. to 1200 A.D. Mr. Biddle.

641. **CIVILIZATION OF ISLAM II.**  
The emergence of non-Arab peoples as the preponderant political influence in the Islamic world and the impact of these peoples on the institutions and traditions of Islam. The empires of the Persians, the Turks, and Muslim civilization in India, 1000 A.D. to 1600 A.D. Mr. Biddle.

642. **THE MODERN MIDDLE EAST.**  
From the impact of the West on the Islamic empires to the present "confrontation" of the West and the Soviet Union Arab and Israeli nationalism. Mr. Kirk.

660. **HISTORY OF MODERN CHINA: THE 19TH CENTURY.**  
The nature of the "traditional" Chinese order inherited by China's alien Manchu rulers; China's response to the West; rise of rebellions; failure of conservative reform; disintegration of an ancient civilization. Mr. Drake.

661. **HISTORY OF MODERN CHINA: THE 20TH CENTURY.**  
Twentieth-century China's revolutions — intellectual, social, economic, political — and their settings, up to the present. Mr. Drake.

662. **HISTORY OF JAPANESE CIVILIZATION**  
The development of Japanese civilization from its origins to the mid-nineteenth century. Mr. Minear.

663. **HISTORY OF MODERN JAPAN.**  
Japan's modernization from the mid-19th century. Mr. Minear.

## Home Economics

### GRADUATE FACULTY

HELEN R. VAZNAIAN, *Associate Professor and Director of the Division of Home Economics*, B.S., State College, Framingham, 1946; M.Ed., Boston University, 1951; Ph.D., Connecticut, 1973.

MARION A. NIEDERPRUM, *Professor and Graduate Program Director*, B.S., New York at Buffalo, 1935; M.S., New York University, 1944; Ph.D., University of Michigan, 1956.

NYLDA LOPEZ-ANSARI, *Associate Professor*, B.S., Inter American University, San German, Puerto Rico, 1954; M.S., Pennsylvania State, 1958; Ph.D., Florida State, 1969.

MARY E. GREEN, *Associate Professor*, B.S., Framingham State, 1956; M.Ed., Boston State, 1960; Ph.D., Cornell, 1968.

## HOTEL, RESTAURANT AND TRAVEL ADMINISTRATION

AURELIA TOYER MILLER, *Associate Professor*, B.S., Bluefield State, 1938; M.A., Atlanta, 1942; Ph.D., New York University, 1952.

BILLIE G. MURPHY, *Associate Professor*, B.A., Blue Mountain, 1951; M.S., Alabama, 1952; Ph.D., Pennsylvania State, 1972.

ANNE H. RIDEOUT, *Professor*, B.S., Middle Tennessee State, 1959; M.A., Connecticut, 1968; Ed.D., Massachusetts, 1974.

WARREN F. SCHUMACHER, *Assistant Professor*, B.A., Cathedral, 1952; J.C.D., Gregorian University (Italy), 1961; M.S., Iona, 1967.

### SUPPORTING FACULTY

KENNETH A. ERTEL, *Professor of Education*.

JACK HRUSKA, *Associate Professor of Education*.

IRENE NYSTROM, *Lecturer in Education*.

The Division of Home Economics grants a Master of Science degree to those who complete one of its several graduate programs of study which are designed to facilitate the development of personal and professional competencies essential to the thrust of Home Economics, namely the improvement of individual and family life in a changing society. The programs of study prepare students for a variety of professional positions in education, in government and business, in Cooperative Extension and community services, for example — administrators of community service agencies, teachers of Home Economics, specialists in clothing and textiles and consumer advocates. In consultation with a graduate adviser and/or Guidance Committee, an individualized, interdisciplinary program is developed in accord with the student's academic background, major content of area of interest and future professional goals.

A candidate must have an accredited baccalaureate degree in Home Economics or in a related root discipline and the approval of the Admission Committee of the Graduate Faculty of the Division of Home Economics. Acceptance also depends upon the fulfillment of the general regulations of the Graduate School of the University. Adequate study basic to an academic area of emphasis may be a prerequisite to graduate work in a particular program.

Additional information may be obtained by writing to the Graduate Program Director in the Division of Home Economics.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED.

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (for either major or minor credit)

700. SPECIAL PROBLEMS IN AN AREA OF HOME ECONOMICS. *Credit, 1-6.*

710. SEMINARS IN VARIOUS AREAS OF HOME ECONOMICS, such as:  
INTERPERSONAL RELATIONSHIPS IN A FAMILIAL CONTEXT. *Ms. Ansari.*

READINGS IN CHILD DEVELOPMENT. *Ms. Ansari.*

CONSUMER AND ECONOMIC PROBLEMS. *Ms. Miller.*

## GRADUATE SCHOOL

ECONOMICS OF THE FAMILY. *Ms. Miller.*

CONSUMER BEHAVIOR. *Ms. Murphy.*

INTRODUCTION TO RESEARCH METHODS IN HOME ECONOMICS. *Ms. Murphy.*

CLOTHING BEHAVIOR. *Ms. Murphy.*

SUPERVISION IN HOME ECONOMICS EDUCATION. *Ms. Green.*

800. MASTER'S THESIS. *Credit, 6-10.*  
Individual research.

#### COURSES OPEN TO BOTH GRADUATE AND UNDER-GRADUATE STUDENTS (For either major or minor credit)

565. HISTORY OF COSTUME.  
Western costume from ancient civilization to the present; the relationship of clothing to the period. Study tours.  
Prerequisite, HOM EC 125.

642. TEXTILES.  
Analysis and evaluation of recent scientific and technical developments in fibers and finishes.  
Prerequisite, HOM EC 240.

661. APPAREL DESIGN.  
Patterns and fitting problems; development and use of master pattern in executing original designs.  
One class hour, two 2-hour laboratories.  
Prerequisite, HOM EC 259, or permission of instructor.

681. ADULT EDUCATION IN HOME ECONOMICS.  
Organization of material, and selection, use, and evaluation of teaching techniques suited to group work with adolescents and adults. Credit toward meeting state standards for teachers and A.D.A. requirements.  
Prerequisite, minimum of 6 credits in major area.

682. CURRICULUM AND METHODS IN HOME ECONOMICS.  
Organization, scope, and sequence of learning experiences in home economics education. Philosophy and content of curriculum, development of resource units, and methods of teaching.  
Prerequisites, Psych 601, 563, and Educa 251. *Credit, 4.*

## Hotel, Restaurant and Travel Administration

### GRADUATE FACULTY

STEVENSON W. FLETCHER, III, *Associate Professor and Head of the Department of Hotel, Restaurant and Travel Administration*, B.S., Pennsylvania State, 1960; M.S., 1964; Ph.D., Massachusetts, 1970.

MORTON BACKER, *Professor of Accounting*.

JOSEPH L. BALINTFY, *Professor of General Business and Finance*.

NORMAN G. COURNOYER, *Professor*, J.D., American University Law School, 1955; M.B.A., Massachusetts, 1962; Ph.D., 1970.

CARL DENNLER, JR., *Professor of Accounting*.

ARTHUR ELKINS, *Associate Professor of Management*.

CHARLES E. ESHBACH, *Professor*, B.S., Massachusetts, 1937; M.P.A., Harvard, 1959; M.S., Massachusetts, 1964.

FREDERICK E. FINCH, *Professor of Management*.

## UNIVERSITY OF MASSACHUSETTS

## HOTEL, RESTAURANT AND TRAVEL ADMINISTRATION

JOSEPH A. LITTERER, *Professor of Management.*

PETER B. MANNING, *Associate Professor, B.S., Vermont, 1957; M.S., Rhode Island, 1961; Ph.D., University of Minnesota, 1969.*

JANE F. McCULLOUGH, *Associate Professor, B.S., Ohio University, 1943; M.S., 1953.*

GORDON W. PAUL, *Professor of Marketing.*

ABRAHAM PIZAM, *Associate Professor, B.A., Hebrew University, 1963; M.P.A., New York University, 1965; Ph.D., Cornell, 1970.*

GEORGE SCHWARTZ, *Professor of Marketing.*

JACK S. WOLF, *Professor of Marketing.*

MAX S. WORTMAN, *Professor of Management.*

ALBERT L. WRISLEY, JR., *Professor, B.S., Cornell, 1950; M.A., Michigan State, 1963; Ph.D., Massachusetts, 1971.*

### THE MASTER OF SCIENCE DEGREE PROGRAM

The Department of Hotel, Restaurant and Travel Administration jointly with the School of Business Administration offers a program leading to the M.S. degree in Hotel, Restaurant and Travel Administration. The program is designed for students whose undergraduate education is primarily in hotel and restaurant management, business administration and related fields. The program includes courses in Hotel, Restaurant and Travel Administration and Business Administration, which develop the student's analytical and research abilities. The degree requirements are:

1. Basic course work in economics, mathematics, statistics, computer methods, accounting, management, finance, marketing, and Hotel, Restaurant and Travel Administration. Students having deficiencies in any of these areas are required to complete appropriate Foundation Courses described elsewhere in this catalog under Business Administration. Students lacking a background in Hotel, Restaurant and Travel Administration are required to complete HRTA 590 and/or other appropriate Hotel, Restaurant and Travel Administration courses.

2. All candidates shall complete the following courses: BA 656/657, BA711, BA722, BA751, HRTA 701, HRTA 702, HRTA 703 and HRTA 704.

3. All candidates shall complete at least two electives from the 500, 600 and 700 level offering in the Department of Hotel, Restaurant and Travel Administration or School of Business Administration. Electives from other departments may be chosen, with the consent of the adviser.

4. The candidate must pass an oral examination based upon his or her graduate work. Three members of the graduate faculty conduct the examination.

### APPLICATION

Application for Graduate Study should be made directly through the Dean of the Graduate School, as described elsewhere in this *Bulletin*. A complete application consists of (a) the application form, (b) two references, (c) two sets of official transcripts of all college-level work, and (d) an official score report on the Admission Test for Graduate Study in Business (ATGSB). The Graduate Record Examination is not acceptable for admission. Information on the ATGSB may be obtained from the Educational Testing Service, 20 Nassau Street, Princeton, NJ 08540. Application

deadlines are found elsewhere in this *Bulletin*. Action is taken immediately upon receipt of a complete application by the Graduate School.

Standards for admission are consistent with those described earlier in this *Bulletin*. A minimum ATGSB score, as determined by the Program Admission Committee, must be obtained by all applicants. Foreign students are not exempt from this requirement. Recommended are use of one of the commercially available study guides, and taking the ATGSB as early as possible in order to allow time for retaking the exam without delaying the admissions process. For applicants desiring entry in the Summer Session or Fall semester the ATGSB application must be at the Educational Testing Service before the scheduled examination date in March.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED.

#### COURSES OPEN TO GRADUATE STUDENTS ONLY.

#### 700. SPECIAL PROBLEMS.

Independent study and research on selected problems in Hotel, Restaurant and Travel Administration.

*Credit, 3-6 each semester.*

#### 701. SEMINAR IN PERSONNEL AND INDUSTRIAL RELATIONS IN THE HOSPITALITY FIELD.

Personnel techniques and industrial relations practices in hotels and restaurants. Initiating and accommodating change, individual and organizational within the hotel or restaurant.

*Mr. Cournoyer.*

#### 702. PLANNING AND DECISION MODELS FOR THE HOSPITALITY INDUSTRIES.

The application of planning and decision models to management problems of the hospitality industries. Emphasis on analytical and quantitative decision models.

*Mr. Wrisley.*

#### 703. MARKET AND ECONOMIC FEASIBILITY STUDIES IN THE HOSPITALITY INDUSTRIES.

The identification and description of factors which affect a proposed new hotel or restaurant and the development of pro forma statements projecting costs and profits for such ventures.

*Mr. Cournoyer.*

#### 704. MANAGEMENT INFORMATION SYSTEMS FOR THE HOSPITALITY INDUSTRIES.

The design and implementation of various management information systems within hospitality industry operations, and their implications for management organization, planning and control.

#### 705. ECONOMICS OF TOURISM.

The dimensions of tourism, markets, travel trends. Economics, social and cultural implications. Socio-economic models and measurements of the consequences of tourism on a region.

#### 706. SEMINAR IN FACILITIES PROGRAMMING FOR THE HOSPITALITY INDUSTRIES.

Principles and concepts from related disciplines as they apply to the planning and operation of lodging and feeding facilities. Emphasis on techniques for computer-assisted solutions.

*Mr. Fletcher.*

#### 800. MASTER'S THESIS.

#### COURSE OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS.

(For either major or minor credit)

#### 590. SEMINAR IN HOTEL AND FOOD SERVICE ADMINISTRATION.

The areas of importance to the operation of a hotel or food service operation.

*Mr. Wrisley.*



## Industrial Engineering and Operations Research

### GRADUATE FACULTY

HUGH J. MISER, *Professor and Acting Head of the Department of Industrial Engineering and Operations Research*, B.S., Vanderbilt, 1938; M.A., Armour Institute of Technology, 1940; Ph.D., Ohio State, 1946.

ROBERT D. DAVIS, *Associate Professor and Graduate Program Director*, B.S., Trinity College, 1956; Ph.D., Northwestern, 1968.

JOSEPH L. BALINTFY, *Professor of General Business and Finance*.

WILLIAM J. DUFFY, *Associate Professor*, B.S., University of Michigan, 1955; M.S., 1969; Ph.D., 1971.

RICHARD J. GIGLIO, *Professor*, B.S., Massachusetts Institute of Technology, 1959; M.S. Stanford, 1964; Ph.D., 1966.

FRANK C. KAMINSKY, *Associate Professor*, B.S., Connecticut, 1961; M.S., Northwestern, 1964; Ph.D., 1965.

KLAUS E. KRONER, *Associate Professor*, B.A., College of Wooster, 1949; B.E.E., New York University, 1957; M.S., American International, 1962.

STANLEY LIPPERT, *Associate Professor*, B.A., California at Los Angeles, 1935.

ROBERT F. RIKKERS, *Associate Professor*, B.S., Grinnell College, 1961; M.S., Northwestern, 1964; Ph.D., 1965.

EDWARD J. RISING, *Professor*, B.M.E., Rensselaer Polytechnic Institute, 1950; M.M.E., Syracuse University, 1954; Ph.D., State University of Iowa, 1959.

RICHARD W. TRUESWELL, *Professor*, M.E., Stevens Institute of Technology, 1952; M.S.I.E., 1958; Ph.D., Northwestern, 1964.

### INDUSTRIAL ENGINEERING AND OPERATIONS RESEARCH

The graduate program in industrial engineering emphasizes the modern and analytical aspects of industrial engineering. Operations-research theory and applications are stressed, although not to the exclusion of traditional industrial engineering.

A Ph.D. in industrial engineering is offered in the major areas of operations research, manufacturing and production, and human-factors engineering. Minor areas of specialization are available within the Department in data processing and information-handling systems and in other areas outside the Department such as computer science, business administration, engineering (all majors), statistics, economics and mathematics. Although not formally established as a major or minor area of study it is possible to concentrate on the study of health care delivery systems and other selected topical areas. The requirements for the Ph.D. degree are essentially described in this catalog under general requirements for the Ph.D. degree.

A master's thesis is optional. If no thesis is written, a special project must be completed, bringing the mini-

mum total number of credits required to 33 rather than 30 as under the thesis program. Industrial Engineering and Operations Research graduate students may select theoretical or applied research projects related to either the industrial-financial sector or the public sector; current projects in the public sector are concerned with health-care delivery, the environment, transportation, and community service.

The Department requires no foreign-language reading competency for the doctoral degree.

Additional information may be obtained by writing to the Head of the Department.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

700. SPECIAL PROBLEMS IN INDUSTRIAL ENGINEERING AND OPERATIONS RESEARCH. Special projects in industrial engineering and/or operations research. Scope varied to meet specific conditions. Prerequisite as required by the problem. *Credit, 1-6.*

701. INDUSTRIAL ENGINEERING AND OPERATIONS RESEARCH. A series of seminars on current, or recent, research conducted by faculty, graduate students, and/or invited lecturers. Required course for all Industrial Engineering and Operations Research graduate students regardless of background. *Credit, 1.*

720. ADVANCED TOPICS IN OPERATIONS RESEARCH I. Theory and application of linear programming. Includes formulation of linear programming models, simplex, revised simplex and dual simplex algorithms, duality, parametric procedures, interpretation of results, and the decomposition principle. Prerequisite, permission of instructor. Mr. Davis, Mr. Giglio, Mr. Rikkers.

722. ADVANCED TOPICS IN OPERATIONS RESEARCH II. Applications and solution techniques for transshipment and discrete programming problems; included are primal-dual algorithms for transshipment problems, primal and dual cutting plane, branch and bound, and heuristic algorithms for discrete programs. Prerequisite, IE/OR 720 or equivalent. Mr. Balintfy, Mr. Davis, Mr. Giglio, Mr. Rikkers.

724. NON-LINEAR AND DYNAMIC PROGRAMMING. Theory and methods required to solve non-linear problems: Kuhn-Tucker theory, quadratic, separable and geometric programming gradient techniques, and dynamic programming. Also methods of stochastic programming are surveyed. Formulations and applications are stressed and case examples are presented. Prerequisite, IE/OR 720. Mr. Davis, Mr. Giglio, Mr. Rikkers.

726. OPERATIONS RESEARCH APPLICATION. Introduction to the practice of operations research. Cases from the literature, the instructor's experience, and backgrounds of government, industry, and education. Field work on an actual case. Prerequisites, IE/OR 680, 720 (concurrent), or permission of instructor. Mr. Giglio, Mr. Miser.

728. RECENT DEVELOPMENTS IN MATHEMATICAL PROGRAMMING. In-depth study of the theory and/or application of recent developments in mathematical programming. Prerequisites, IE/OR 722 and 724. Mr. Davis, Mr. Giglio, Mr. Rikkers.

**751. DESIGN FOR PRODUCTION**

The analysis of the factors and techniques, theoretical and practical, involved in the effective design of production systems.

Prerequisite, basic knowledge of statistics and operations research. Mr. Sadowski.

**752. MECHANIZATION AND AUTOMATION**

Investigation and analysis of the planning and control problems associated with the mechanization and automation of production systems.

Prerequisite, basic knowledge of the area. Mr. Sadowski.

**753. METHODS OF MEASUREMENT OF HUMAN WORK**

Analysis of physiological and/or psychological aspects of work situations. Learning, skilled performance, decision processes.

3 class hours, lectures and projects.

Prerequisite, permission of instructor.

Mr. Duffy, Mr. Lippert.

**754. ADVANCED TOPICS IN ENGINEERING ECONOMY.**

An integrated treatment of elements of engineering economy, economics, accounting, finance and operations research to provide a unified background for economics decision-making.

Prerequisites, background in economics, engineering mathematics, and elementary probability theory. Mr. Giglio.

**755. QUALITY CONTROL AND RELIABILITY ENGINEERING.**

Current methods and techniques in quality control and reliability will be developed and discussed with emphasis being placed on the application of these principles.

Prerequisite, IE/OR 572. Mr. Rising, Mr. Sadowski.

**756. ADVANCED TOPICS IN DATA PROCESSING.**

Probability theory and information theory, components and operation of analog and digital computers, the analysis of large-scale data-processing systems as applied to the functioning of organizational control systems.

Prerequisite, IE/OR 556. Mr. Trueswell.

**757. HUMAN FACTORS DESIGN ENGINEERING.**

The design of engineering systems, machines, consumer goods, etc. which accommodate the characteristics of the human users, operators and maintainers. Methods are developed for obtaining data about human performance, preferences, tolerances, and group behavior needed in engineering design problems. The case method is used with comprehensive readings in the literature. Student projects relating to human factors in design are encouraged.

Prerequisite, permission of instructor.

Mr. Duffy, Mr. Lippert.

**758. DESIGN OF CLOSELY-CONFINED MANNED-OPERATIONS STATIONS (OE 781).**

Introductory anatomy and physiology; respiration, effects of various air composition and pressures on efficiency, console design, anthropometry, work place layout; design of controls, psychological and physiological effects of work in confined spaces; system design and allocation of function.

Three class hours, one 2-hour laboratory per week.

Prerequisite, IE/OR 757 or permission of instructor.

Credit, 4. Mr. Duffy, Mr. Lippert.

**761. DATA PROCESSING SYSTEMS ANALYSIS AND DESIGN.**

Analysis and design of small, medium, and large-scale electronic data processing systems. Real-time systems applications currently in use and proposed in the data-processing areas as opposed to the scientific areas. Electronic data processing systems and their effect on industrial and other organizations.

Mr. Anderson, Mr. Trueswell.

**762. COMPUTER METHOD FOR OPERATIONS RESEARCH/MANAGEMENT SCIENCE APPLICATIONS.**

The development of computer systems to process data and implement algorithms in the operations research/management science literature. A project-oriented course; both technical and user-oriented manuals will be prepared for each project.

Prerequisites, IE/OR 722 or IE/OR 724 (concurrent) and facility with a scientific programming language such as FORTRAN IV.

Mr. Kaminsky, Mr. Rikkers.

**763. INFORMATION SCIENCE AND TECHNOLOGY**

The information searching tools and techniques available to scientific and industrial organizations. Individual and group behavior in using these techniques. Critical analyses of information searching and retrieval systems, both manual and automated.

Mr. Trueswell.

**777. MANUFACTURING CONTROL.**

A quantitative and qualitative analysis of decision-making techniques in manufacturing and production control. Techniques in areas such as scheduling, queuing, inventory control, and process control are studied, extended, and evaluated.

Prerequisites, basic knowledge of statistics, principles of operations research, and an elementary course in the field.

Mr. Rising, Mr. Sadowski.

**783. SIMULATION AND MONTE CARLO TECHNIQUE.**

Theory and application of simulation to problems of interest to the Industrial Engineer. Students are expected to design, develop, test, and evaluate several different types of complex simulation models.

Prerequisites, IE/OR 572, 573. Mr. Sadowski and Staff.

**784. STOCHASTIC PROCESSES IN INDUSTRIAL ENGINEERING I**

Application and theory of stochastic processes with primary emphasis on Markovian processes. Applications in inventory control, maintenance, and queuing theory.

Prerequisite, IE/OR 571. Mr. Kaminsky, Mr. Rikkers.

**785. STOCHASTIC PROCESSES IN INDUSTRIAL ENGINEERING II**

Continuation of IE/OR 784: the study of Markov processes. Included are non-Markovian processes, regenerative stochastic processes, and imbedded Markov processes. Both theory and applications.

Prerequisite, IE/OR 784. Mr. Kaminsky, Mr. Rikkers.

**786. DECISION ANALYSIS**

Decision problems involving the choice between alternatives when uncertainty is present. Emphasis on the practical applications of this method, rather than on the more abstract theory. Topics include the structure of a Decision Analysis problem, the assessment of the decision-maker's value structure.

**791. SEMINAR IN OPERATIONS RESEARCH.**

Current applications, research activities, and research problems in operations research. Advanced master's and Ph.D. students only.

Mr. Davis, Mr. Giglio, Mr. Kaminsky,  
Mr. Miser, Mr. Rikkers.

**792. SEMINAR IN MANUFACTURING AND PRODUCTION.**

Current application, research activities, and research problems in manufacturing and production. Advanced master's and Ph.D. students only.

Mr. Rising, Mr. Sadowski.

**793. SEMINAR IN DATA-PROCESSING AND INFORMATION-HANDLING SYSTEMS**

Current applications, research activities, and research problems in information-handling and data-processing systems. Advanced master's and Ph.D. students only.

Mr. Trueswell.

**800. MASTER'S THESIS.**

Credit, 3-6.



## INDUSTRIAL ENGINEERING AND OPERATIONS RESEARCH

## GRADUATE SCHOOL

### 900. DOCTORAL DISSERTATION.

*Credit, 18.*

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

#### 553. METHODS AND STANDARDS ENGINEERING.

The principles involved in the simplification of the work pattern and the design of the work place, and in the establishment of production standards.

Three class hours, one 3-hour laboratory period.

Prerequisite, IE/OR 271, previously or concurrently.

*Credit, 4.* Mr. Duffy, Mr. Kroner, Mr. Lippert.

#### 556. DATA PROCESSING AND INFORMATION HANDLING SYSTEMS.

Principles and applications of data-processing and electronic computer systems for use by industrial engineers as a management tool for control and decision making.

Prerequisite, permission of instructor.

Mr. Trueswell.

#### 641. HOSPITAL INDUSTRIAL ENGINEERING I.

Introduction to the application of industrial engineering techniques to hospital management. Emphasis on the institution of industrial engineering programs in hospitals and the choice of suitable projects. Guest lecturers.

Mr. Rising.

#### 642. HOSPITAL INDUSTRIAL ENGINEERING II.

A projects course based upon material covered in IE/OR 641. A study is first made of previous industrial engineering projects in hospitals; each student then conducts a project of his own in a local hospital.

Prerequisite, IE/OR 641.

Mr. Rising.

#### 660. SAFETY ENGINEERING.

Occupational health and safety for industrial engineers. Especial attention directed toward requirements of the Occupational Safety and Health Administration of the Federal Government.

Mr. Lippert.

#### 675. JOB EVALUATION.

The principles used to determine an evaluation of all occupations in order to establish an equitable rating between them, to establish sound wage and salary policies.

Prerequisite, IE/OR 151.

*Credit, 2.* Mr. Duffy, Mr. Lippert.

#### 676. TIME STUDY.

The principles involved in the establishment of production standards and their application in the management function of cost accounting, estimating, production control incentives, budgetary control.

Prerequisite, IE/OR 151 concurrently except for Business Administration majors.

Mr. Duffy, Mr. Lippert.

#### 677. LAYOUT AND DESIGN OF INDUSTRIAL FACILITIES.

The principles applying to plant layout, materials handling, and plant location. Modes of layout presentations illustrated by means of a student project.

Prerequisite, IE/OR 678 or permission of instructor.

Mr. Kroner, Mr. Sadowski.

#### 682. WORK SIMPLIFICATION.

The principles involved in the simplification of means of doing work and in the application and use of these principles.

One class hour, one 3-hour laboratory period.

Prerequisites, ME 568 and IE/OR 676 concurrently.

*Credit, 2.* Mr. Duffy, Mr. Lippert.

### COURSES NOT FOR MAJOR CREDIT

(No graduate credit for students majoring in Industrial Engineering & Operations Research)

#### 560. DESIGN OF MAN-MACHINE SYSTEMS I.

Introduction to principles of human-factors engineering. Anthropometric, physiological, and psychological data sources. Data-gathering and analysis techniques useful to

designers and industrial engineers. Occupational health and safety standards.

Three class hours include lectures, demonstrations, and experiments. Project option.

Mr. Duffy, Mr. Lippert.

#### 561. DESIGN MAN-MACHINE SYSTEMS II.

Human factors data applications to design of equipment and industrial urban and vehicle environment. Decision processes, communication. Problems of layout in industry, hospitals, etc. Involves more complex problem applications than IE/OR 260/560.

Three class hours include lectures, demonstrations, and experiments.

Project option.

Prerequisite IE/OR 260/560 or permission of instructor.

Mr. Duffy, Mr. Lippert.

#### 571. BASIC PROBABILITY FOR ENGINEERS.

Probability theory, including: samples spaces; discrete and continuous random variables; functions of random variables; marginal, conditional, and joint probability, density and cumulative distribution functions and movements.

Prerequisite, Math 124.

Mr. Davis, Mr. Giglio, Mr. Kaminsky, Mr. Rikkers.

#### 572. PRINCIPLES OF ENGINEERING STATISTICS.

Statistical principles as applied to engineering problems including hypothesis testing, estimation, analysis of variance, design of experiments, sampling plans, statistical quality control.

Prerequisite, IE/OR 571.

Mr. Kaminsky.

#### 573. INTRODUCTION TO SIMULATION METHODS

(also listed as GB 573).

Introduction to the principles and methods of computer simulation for the analysis and design of complex systems. Problems associated with developing valid and meaningful conclusions from simulation experimentation. Emphasis on experimental design, model validation and verification, and analysis of results.

Prerequisite, IE/OR 571 and basic knowledge of FORTRAN.

Mr. Kaczka, Mr. Rising, Mr. Balintfy, Mr. Sadowski.

#### 653. INDUSTRIAL-ENGINEERING ECONOMICS I.

Accounting tools used by the industrial engineer for effective cost control and the economic operation of industrial enterprises.

Mr. Giglio, Mr. Kroner, Mr. Sadowski.

#### 654. INDUSTRIAL-ENGINEERING ECONOMICS II.

Intended for all technical personnel. Concepts and techniques required to make sound economic decisions. Topics include use of interest formulas, replacement theory, scheduling algorithms, lease buy decisions, taxation and depreciation, decision-making under risk, forecasting and financing of projects in both the public and private sections.

Mr. Giglio, Mr. Kroner, Mr. Sadowski.

#### 678. PRODUCTION PLANNING AND CONTROL.

Analysis of quantitative and qualitative techniques for production planning and control with emphasis on their application to various production systems.

Prerequisites, IE/OR 572,680.

Mr. Kroner, Mr. Rising, Mr. Sadowski.

#### 679. OPERATIONS RESEARCH I.

Deterministic models of operations research; structure and formulation of decision models for planning and operating systems and algorithms for the solution of linear programs, network problems, integer programs, and multi-stage decision problems. Credit not allowed for student who have taken Management 253,254.

Mr. Davis, Mr. Giglio, Mr. Kaminsky, Mr. Rikkers.

#### 680. OPERATIONS RESEARCH II.

Stochastic operations research models including probabilistic dynamic programming models, Markov chain theory, inventory models, and queuing models. Credit not allowed for students who have taken Management 253, 254.



## UNIVERSITY OF MASSACHUSETTS

## LABOR STUDIES

Prerequisites, IE/OR 679 and IE/OR 571 or an equivalent background in probability theory.  
Mr. Davis, Mr. Giglio, Mr. Kaminsky, Mr. Ridders.

### Labor Studies

#### GRADUATE FACULTY

HARVEY L. FRIEDMAN, *Associate Professor of Political Science and Director of the Labor Relations and Research Center*, J.D., Boston University, 1947.

SOLOMON BARKIN, *Professor of Economics*.

JOHN L. BLACKMAN, JR., *Associate Professor of Economics*.

DAVID R. BLOODSWORTH, *Assistant Director of the Labor Relations and Research Center*, M.S. in Labor Studies, Massachusetts, 1968.

TIM L. BORNSTEIN, *Associate Professor of Law and Industrial Relations*.

JOHN T. CONLON, *Professor of Management*.

HILDA GOLDEN, *Associate Professor of Sociology*.

BRUCE G. LAURIE, *Assistant Professor of History*.

GEORGE T. SULZNER, *Associate Professor of Political Science*.

RICHARD W. TRUESWELL, *Professor of Industrial Engineering*.

BARBARA F. TURNER, *Associate Professor of Human Development and Psychology*.

STANLEY J. YOUNG, *Professor of Management*.

#### THE MASTER OF SCIENCE IN LABOR STUDIES DEGREE PROGRAM

The graduate curriculum leading to the Master of Science in Labor Studies is an interdepartmental one, with responsibility for coordinating students' programs vested in the interdisciplinary committee recommended by the Advisory Council of the Labor Center and approved by the Dean of the Graduate School.

Students in this program are individually advised by members of the Interdisciplinary Committee.

Two years is considered the normal period for completing this degree.

Students who successfully complete the graduate curriculum in Labor Studies will be prepared primarily for academic work, labor union employment, and government service.

The basic requirements for the degree are:

1. Forty-two graduate credits of which no more than nine may be transferred from other accredited institutions.

2. A research project (in the first year), an internship (in the summer), and an administrative assignment in the worker's education extension teaching area (in the second year) are expected of each candidate.

3. A thesis is optional.

Students admitted to the Master of Science in Labor Studies degree program must meet the admission requirements of the Graduate School. An undergraduate major in a social science or in business administration is a normal prerequisite to admission. Applicants for admission should ordinarily have completed introductory college courses in principles of economics,

labor economics or labor problems, statistics, and sociology or psychology. Students may be admitted who are deficient in one or more of these courses, but such students will be required to remove any deficiencies without credit toward the M.S. degree. College-level courses that would be helpful, although not required, include industrial relations, government, and industrial engineering. A feature of the program requires all students to serve a summer internship between their first and second year and an assignment in field work with unions, government agencies, etc.

Students are required to take the following courses in order to qualify for this degree:

BA 751. Organizational Behavior.

History 636. History of the American Labor Movement.

Econ. 743. Wage Theory and Wage Relationships.

Econ. 741. Collective Bargaining.

Econ. 747. Manpower Development.

Labor Rel 710. Seminar in Labor Relations.

Labor Rel 705. Practicum in Labor Research.

One graduate course in the 500, 600, or 700 series in psychology; sociology and/or industrial engineering, approved by the Director. In addition, students are required to choose five electives, at least one of which must be selected from Labor Rel 764, Econ 742, 745, 641, 746, SBA 760 & 762.

#### Required Courses marked with \*.

#### Labor Relations and Research Center Course Offerings

700. SPECIAL PROBLEMS. *Credit, 1-6.*

\*705. PRACTICUM IN LABOR RESEARCH I AND II

The practical aspects of labor relations with periodic seminars on methodology. Research projects of the Center are used for experience, as well as areas of particular concern to the students. *Credit, 6.*

\*710. SEMINAR IN LABOR RELATIONS

Critical issues in the labor field, such as nature of work, "unemployment pockets," racial integration in unions. Based upon historical perspective, selected research and field work. Taken in second year. *Credit, 3. Mr. Friedman.*

764. THE GOVERNMENT OF UNIONS.

The organization and structure of unions, management of union activity, and policies and practices of unions, including administration, contract negotiations, union organization and grievance handling. *Credit, 3. Mr. Friedman.*

777. LABOR RELATIONS IN THE PUBLIC SECTOR.

Labor relations for employees of federal, state, and local government including but not limited to educational employees, professionals, and persons anticipating careers in government. Special attention to statutory requirements.

*Credit, 3. Mr. Friedman.*

#### School of Business Administration Course Offerings

700J. EMPLOYEE RELATIONS LAW.

\*751. ORGANIZATIONAL BEHAVIOR.

761. SEMINAR IN PERSONNEL MANAGEMENT.

762. MANAGEMENT OF INDUSTRIAL RELATIONS.

763. SEMINAR IN INDUSTRIAL RELATIONS.

803. MANAGEMENT SYSTEMS.

## LANDSCAPE ARCHITECTURE AND REGIONAL PLANNING

## GRADUATE SCHOOL

### Department of Economics Course Offerings

- 542. LABOR LAW AND LEGISLATION.
- 638. ECONOMICS OF HEALTH.
- 641. ECONOMIC SECURITY.
- 645. HUMAN RESOURCE ECONOMICS.
- 647. ECONOMICS OF THE LABOR MARKET.
- \*741. COLLECTIVE BARGAINING.
- \*743. WAGE THEORY AND WAGE RELATIONSHIPS.
- 745. LABOR DISPUTE SETTLEMENT.
- 746. COMPARATIVE LABOR MOVEMENTS.
- \*747. MANPOWER DEVELOPMENT.

### Department of Psychology Course Offerings

- 580. SOCIAL PSYCHOLOGY.
- 588. INDUSTRIAL PSYCHOLOGY.

### Department of Sociology Course Offerings

- 551. URBAN SOCIOLOGY.
- 556. RACE RELATIONS.
- 575. SOCIAL PROBLEMS.
- 592. INTRODUCTION TO SOCIAL WELFARE.
- 718. INDUSTRIAL SOCIOLOGY.
- 731. SOCIAL GERONTOLOGY.
- 759. SOCIAL STRATIFICATION.
- 785. COMPLEX ORGANIZATIONS.

### Department of Political Science Course Offerings

- 517. MASSACHUSETTS POLITICS.
- 523. PUBLIC ADMINISTRATION.
- 560. CONSTITUTIONAL LAW.
- 561. CIVIL LIBERTIES.
- 605. THE LEGISLATIVE PROCESS.
- 614. METROPOLITAN POLITICS.
- 624. ADMINISTRATIVE LAW.
- 627. COMPARATIVE PUBLIC POLICY.

### Department of History Course Offerings

- 624. THE PROGRESSIVE AGE (1900-1920).
- 625. THE UNITED STATES BETWEEN THE WORLD WARS.
- 630. SOCIAL HISTORY OF THE UNITED STATES.
- \*636. HISTORY OF THE AMERICAN LABOR MOVEMENT.
- 637. THE CITY IN THE MODERN UNITED STATES.

### Department of Industrial Engineering and Operations Research Course Offerings

- 752. MECHANIZATION AND AUTOMATION.
- 753. METHODS OF MEASUREMENT OF HUMAN WORK.

## *Landscape Architecture and Regional Planning*

### GRADUATE FACULTY

PAUL N. PROCOPIO, *Professor of Landscape Architecture and Acting Head of the Department*, B.S., Massachusetts, 1941; M.S., 1954.

JULIUS GY. FABOS, *Professor of Landscape Architecture and Resource Planning and Graduate Program Director*, B.S., Rutgers, 1961; M.L.A., Harvard, 1964; Ph.D., University of Michigan, 1973.

THEODORE S. BACON, JR., *Professor of City and Regional Planning*, B.A., Amherst, 1942; M.C.P., Massachusetts Institute of Technology, 1956.

MORTON B. BRAUN, *Lecturer in City and Regional Planning*, B.A., Harvard, 1941; M.G.R., Massachusetts Institute of Technology, 1948.

ROBERT O. BRUSH, *Lecturer, North Eastern Forestry Research Unit*, B.S., Massachusetts, 1966; M.L.A., 1968.

WALTER H. BUMGARDNER, *Assistant Professor of Park Administration and Regional Planning*, B.S., Southern Illinois, 1966; M.S., 1968; Ph.D., Texas A and M, 1974.

CARL A. CARLOZZI, *Adjunct Associate Professor of Resource Planning*, B.S., Kent State, 1955; M.A., 1957; Ph.D., Michigan, 1965.

RICHARD J. COSTLEY, *Professor of Park Administration and Regional Planning*, B.S., Utah State, 1934; M.S., Illinois, 1936.

CHESTER CRAMER, *Assistant Professor of Landscape Architecture*, B.S., Massachusetts, 1966; M.L.A., Harvard, 1968.

HUGH C. DAVIS, *Professor of Resource Planning*, B.S., Rollins College, 1950; M.S., University of Michigan, 1955; Ph.D., 1960.

NICHOLAS T. DINES, *Associate Professor of Landscape Architecture*, B.S., Michigan State, 1966; M.L.A., Harvard, 1968.

JOHN H. FOSTER, *Adjunct Professor of Regional Planning and Professor of Agricultural and Food Economics*.

ARNOLD FRIEDMANN, *Adjunct Professor of Landscape Architecture and Professor of Design*, B.F.A., Pratt Institute of New York University, 1953; M.S., 1960.

BARRIE B. GREENBIE, *Professor of Urban and Regional Planning*, B.S., Florida, 1953; M.S., Wisconsin, 1968; Ph.D., 1972.

CHRISTOPHER M. GREENE, *Visiting Lecturer of Regional Planning*, B.A., Wesleyan, 1969; M.L.A., Massachusetts, 1972.

TOM S. HAMILTON, JR., *Associate Professor of Land-*

## UNIVERSITY OF MASSACHUSETTS

## LANDSCAPE ARCHITECTURE AND REGIONAL PLANNING

*scape Architecture*, B.F.A., Illinois, 1950; M.S., Massachusetts, 1952.

BENJAMIN ISGUR, *Adjunct Professor of Resource Planning*, B.S., Massachusetts, 1933; M.S., 1935; Ph.D., 1940.

ROBERT L. KENT, JR., *Associate Professor of Landscape Architecture*, B.S., Michigan State, 1957; M.L.A., 1959.

GORDON S. KING, *Professor of Arboriculture and Park Administration*, B.S., Michigan State, 1941; M.S., Massachusetts, 1956.

JOHN H. MARTIN, *Associate Professor of Architecture and Landscape Architecture*, A.R.I.B.A., Brighton College of Art, 1956; Certificate, University College, London, 1960; M.L.A., Harvard, 1967.

HAROLD E. MOSHER, *Professor of Landscape Architecture*, B.S., Massachusetts, 1942; B.L.A., 1947; M.L.A., 1957.

GUSTAVE D. OLSON, JR., *Assistant Professor in Landscape Operations and Park Administration*, B.S., Massachusetts, 1968; M.R.P., 1972.

RUTHERFORD H. PLATT, *Adjunct Assistant Professor of Regional Planning, Assistant Professor of Geography and Regional Planning, and Research Associate, Institute for Man and Environment*, B.A., Yale, 1962; J.D., Chicago, 1967; Ph.D., 1971.

ANDREW J. W. SCIEFFEY, *Professor of Regional and Policy Planning*, B.A., Haverford, 1951; M.S., Michigan, 1952; Ph.D., 1958.

HARRY E. SCHWARZ, *Lecturer in Regional Planning*, B.C.E., George Washington, 1954.

PAUL W. SHULDINER, *Adjunct Professor of Regional Planning and Professor of Civil Engineering*, B.S., Illinois, 1951; M.S., California at Berkeley, 1961.

MELVIN H. SMITH, *Adjunct Professor of Landscape Architecture and Lecturer in Architecture*, B.S., Massachusetts Institute of Technology, 1954.

WILLIAM H. STEWART, *Visiting Lecturer of Landscape Architecture*, B.L.A., Michigan, 1961; M.L.A., 1968.

ROSS S. WHALEY, *Professor of Resource and Economic Planning and Dean of the College of Food and Natural Resources*, B.S., Michigan, 1959; M.S., Colorado State, 1961; Ph.D., Michigan, 1969.

ERVIN H. ZUBE, *Professor of Landscape Architecture and Regional Planning and Director of the Institute for Man and Environment*, B.S., Wisconsin, 1954; M.L.A., Harvard, 1959; F.A.A.R., American Academy in Rome, 1961; Ph.D., Clark, 1973.

### DEGREE PROGRAMS

At the graduate level, the department offers the Master of Landscape Architecture (M.L.A.) and Master of Regional Planning (M.R.P.) degrees. In an attempt to concentrate on areas in which faculty have particular abilities in the hope of matching them with special interests and needs of students and their prospective employers, the Department offers three general areas of concentration:

#### LANDSCAPE ARCHITECTURE PROGRAM (M.L.A. Degree)

This program is intended to provide the student with basic technical knowledge in the execution of the

responsibilities of the landscape architect in general practice. Emphasis is on both social and natural systems and the manifestations of their interrelationships through physical form. Studio work emphasizes real world problems as much as possible through designs for actual environments in the campus area. Some of these are projects that may actually be carried out in the field, studio work also emphasizes design as *Art*. Employment in private landscape architecture firms as well as many public agencies concerned with quality of the visual environment is the most likely goal for the graduates of this program, but some landscape architects also find planning and administrative jobs in various corporations and agencies.

#### LANDSCAPE PLANNING PROGRAM (M.L.A. or M.R.P. Degrees)

This program emphasizes the physical and ecological aspects of regional landscape planning and design with emphasis on in-depth knowledge of natural processes in relation to the visual and cultural values of landscapes. The principal objective of this program is to produce planners capable of integrating physical and aesthetic aspects of the regional landscape with institutional and political decision making processes. The advent of citizen concerns over land use, and consequent federal and state environmental protection acts, makes this program particularly appropriate for planners and designers with a large-scale environmental outlook.

#### REGIONAL PLANNING PROGRAM (M.R.P. Degree)

The purpose of this program is to develop in the student an understanding of the political, administrative and institutional framework within which regional planning is carried out and plans implemented. While geared heavily to social and institutional concerns, it relates these to ecological constraints and design criteria which will weigh increasingly in planning decisions affecting the regional landscape. Graduates of this program are particularly suited to (though certainly not limited to) employment in municipal, regional and state planning offices.

It is recognized that these programs do not cover the wide spectrum of activities which may be included within either of the professions of Landscape Architecture or Regional Planning. The Department and the University offer a number of complementary courses. These programs are established as guides rather than blueprints, but they reflect special competency, experience and interests which the faculty wishes to share with students as well as planning agencies and the public at large.

### DEGREE REQUIREMENTS:

Master of Landscape Architecture  
Master of Regional Planning

The Master's degree program offers a latitude to the student with regard to the selection of courses. Rigid degree requirements are not stated insofar as formal course work is concerned. It is required that all students meet with their academic advisers prior to the start of classes to determine a suitable program. However, the degree is conferred only upon those graduate students who have satisfactorily met the following basic requirements:



## LANDSCAPE ARCHITECTURE AND REGIONAL PLANNING

## GRADUATE SCHOOL

- 1) Work covering at least four semesters in residence.
- 2) A minimum of three months spent in professional practice or research.
- 3) The earning of not fewer than 46 credits, of which 28 consist of graduate level courses given within the Department of Landscape Architecture and Regional Planning.
- 4) The preparation of a satisfactory thesis or terminal project and satisfactory completion of an oral examination on the same by the end of the fourth semester in residence. (Basically, a terminal project is similar to a thesis in terms of scope of work required. However, the mode of presentation for the terminal project is much more flexible; e.g., large fold-out maps are not permitted in the presentation of a thesis, but are permitted in a terminal project.)
- 5) Fulfillment of the requirements indicated in the curriculum guidelines (for the student's program) which were in effect at the time of the student's first semester in this graduate program.
- 6) See additional requirements under the General Information Section of this *Bulletin*.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY

#### Landscape Architecture

700. SPECIAL PROBLEMS. Credit, 1-5.
701. DESIGN PROBLEMS I.  
Emphasis on the development of skills in site design. Deals with smaller-scale site-development problems, site analysis, program development, design process, and alternative methods of communication. Individual and team projects.  
Prerequisite, Env Des 235, 236, & 615. Credit, 5. Mr. Gluck.
702. DESIGN PROBLEMS II.  
Essentially a problem-solving course, drawing upon techniques from landscape design, physical planning, and architectural design. Problems of varying scale and complexity. Current real world problems emphasized.  
Prerequisite, Env Des 615.  
Credit, 5. Mr. Gluck, Mr. Martin.
703. ECOLOGY AND PHYSIOGRAPHY.  
Visual evaluation of plant associations as related to land form and environmental conditions. Field studies.  
Mr. Mosher.
706. PRESENTATION.  
Advanced visual communications techniques applicable to landscape architecture.
707. CONSTRUCTION.  
Problems in landscape construction as related to general design.  
Mr. Dines.
708. CONSTRUCTION.  
Road alignment, computations, and advanced landscape construction.  
Mr. Dines.
- 713,714. SEMINAR.  
Professional topics in landscape architecture. Mr. Martin.
721. LANDSCAPE PLANNING.  
An introduction to landscape types, values, and landscape assessment techniques. Landscape planning considerations for land use and management, and traditional as well as developing landscape planning procedures are also discussed.  
Credit, 2, each semester. Mr. Fabos, Mr. Zube.

#### 731. ADVANCED DESIGN PROJECTS.

Advanced design projects.  
Credit, 5. Mr. Martin, Mr. Procopio.

#### 737. PROFESSIONAL PRACTICE.

Professional office-management and procedures; ethics, commissions, contracts, responsibilities, specifications; and cost estimating.  
Mr. Kent.

#### 793-794. SEMINAR.

Topics in environmental planning and design research and theory.  
Credit, 2 each semester.

#### 800. MASTER'S THESIS.

Credit, 8.

#### 801. TERMINAL PROJECT.

Credit, 8.

#### Regional Planning.

#### 700. SPECIAL PROBLEMS.

Credit, 1-5.

#### 741. WATER RESOURCES PLANNING.

Water resources planning as a part of environmental planning, the state of the art from technical and institutional viewpoints, the steps and components of the water resources planning process.  
Mr. Schwarz.

#### 743. LAND AND THE DEVELOPMENT OF COMMUNITIES.

Land and its use from ancient to modern times. Emphasis on the resource base and its importance as the intensity of land-use increases in the development of both rural communities and highly urbanized areas.  
Mr. Bacon.

#### 744. METROPOLITAN AND REGIONAL PLANNING.

The growth and decentralization of cities and the formation of metropolitan areas. Planning as applied to the metropolitan complex and for various types of regions.  
Mr. Bacon.

#### 751. PLANNING IN THE POLITICAL MOVEMENT.

Planning as a decision-making process, the attributes of the political and administrative environment within which planning takes place, and the implications of this environment for the planning process and the planner.  
Mr. Sears.

#### 753. RESOURCE POLICY AND PLANNING.

Policy formation and the planning process at the local, state and regional levels; the role of Congress, the bureaucracy and citizen interests in policy formation; the interplay among forces of economics, technology, ecology and design in the determination of policy goals and planning horizons.  
Mr. Scheffey, Mr. Whaley.

#### 758. ENVIRONMENTAL ADMINISTRATION.

Alternative administrative arrangements for dealing with problems of environmental management and control at various levels of government.  
Mr. Scheffey.

#### 765. DYNAMICS OF HUMAN HABITATIONS.

The complex interactions that take place between man and the physical environment. Information and viewpoints from psychology, sociology, biology, ecology, ethnology, art, architecture, and planning.  
Mr. Greenbie.

#### 775. PROJECTS IN PLANNING I.

Development of elementary planning and design methods, application in the planning of projects.  
Mr. Braun.

#### 776. PROJECTS IN PLANNING II.

Development of advanced-level planning and design methods, application in the planning of projects.  
Prerequisite, Reg Pl 775.  
Mr. Braun.

#### 781. REGIONAL PLANNING STUDIO.

Preparation of regional-development plans based upon an interdisciplinary approach to the analysis and evaluation of regional problems and potentials.  
Credit, 5.  
Mr. Carlozzi, Mr. Fabos, Mr. Foster, Mr. Sears.

## UNIVERSITY OF MASSACHUSETTS

### 788. URBAN AND REGIONAL SIMULATION AND GAMING.

Purposes and characteristics of models, simulations, and games. Brief examination of several recent urban and regional planning models, in-depth examination of two or three. The model-building process. Mr. Sears.

795.(I), 796.(II). SEMINAR.

800. MASTER'S THESIS. Credit, 8.

801. TERMINAL PROJECT. Credit, 8.

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

#### Environmental Design

##### 543. HISTORY AND THEORY I.

A broad survey of the history of the designed human environment, from the origins of human society into the Renaissance. Mr. Martin.

##### 544. HISTORY AND THEORY II

A broad survey of the history of the designed human environment, from the Renaissance to the present. Mr. Fabos.

##### 615. GRAPHIC COMMUNICATION II.

Current techniques used in the graphic communication of the analysis and solution of environmental-design problems, and the development of facility in the use of various media. Prerequisite, Env Des 212. Mr. Dines. Credit, 4.

##### 628. APPLIED DESIGN.

The development of an approach embodying the application of theory and design principles to the solution of environmental design problems. Prerequisites, 615 and 647. Credit, 4. Mr. Cramer, Mr. Martin.

##### 647. THEORY I

Basic physical and ecological principles to be considered in design and planning. Mr. Cramer, Mr. Gluck.

##### 648. THEORY II.

Basic economic, social, and political principles to be considered in design and planning. Mr. Cramer, Mr. Gluck.

#### Landscape Architecture

##### 653. LAND FORM.

The manipulation of land surfaces and its graphic representation through topographical plans, cross sections, profiles, and models.

Prerequisite, Env Des 212. Credit, 2. Mr. Procopio.

##### 656. CONSTRUCTION MATERIALS.

Material used in landscape construction, their design potential and limitations.

Prerequisite, Ld Arc 653. Mr. Kent.

##### 668. OPEN-SPACE PLANNING AND DESIGN.

The relationship of open-space planning to city and regional planning; the various functions of open space; the problems of planning and designing parks and recreation areas to satisfy varying needs. Mr. Bumgardner, Mr. Greenbie.

#### Regional Planning

##### 545. METROPOLITAN TRANSPORTATION.

(See Business Administration 545).

##### 573. CITY-PLANNING HISTORY.

The historical aspects of changing land uses, the evolution of community form, and the development of urban areas.

Mr. Bacon.

## LINGUISTICS

### 574. CITY PLANNING.

Planning techniques and legal tools for guidance and control of contemporary urban and metropolitan development. Special consideration of problems of land use, housing, transportation, and related urban elements. Mr. Bacon.

### 602. ECOLOGICAL PRINCIPLES OF RESOURCE PLANNING.

(See Forestry 602).

Prerequisite, permission of instructor. Mr. Carlozzi.

### 677. URBAN PROBLEMS I.

Urban issues in the context of metropolitan and regional implications, changing functions and relationships of central cities and suburbs, housing, zoning, urban blight, employment, and industrial location, formulation of planning goals.

### 678. URBAN PROBLEMS II.

Arterial systems, fiscal problems and capital problems, grant programs, local administrative organization, metropolitan and regional organization.

## Linguistics

### GRADUATE FACULTY

SAMUEL JAY KEYSER, *Professor and Head of the Department of Linguistics*, B.A., George Washington University, 1956; B.A., Honors, Oxford University (Merton), 1958; M.A., Yale University, 1960; Ph.D., 1962.

THOMAS ROEPER, *Assistant Professor and Graduate Program Director*, B.A., Reed, 1965; Ph.D., Harvard, 1973.

EMMON WERNER BACH, *Professor*, B.A., University of Chicago, 1949; M.A., 1955; Ph.D., 1959.

JAMES E. CATHEY, *Associate Professor of Germanic Languages and Literatures*.

DONALD C. FREEMAN, *Professor*, B.A., Middlebury, 1959; M.A., Brown, 1961; Ph.D., Connecticut, 1965.

TERENCE PARSONS, *Professor of Philosophy*.

BARBARA HALL PARTEE, *Professor of Linguistics and of Philosophy*, B.A., Swarthmore, 1961; Ph.D., Massachusetts Institute of Technology, 1965.

ALAN S. PRINCE, *Assistant Professor*, B.A., McGill, 1971. Ph.D., Massachusetts Institute of Technology, 1975.

ROBERT ROTHSTEIN, *Associate Professor of Slavic Languages and Literatures*.

ELISABETH O. SELKIRK, *Assistant Professor*, B.A., California at Berkeley, 1967; Ph.D., Massachusetts Institute of Technology, 1972.

EDWIN S. WILLIAMS, *Assistant Professor*, A.B., Princeton, 1970; Ph.D., Massachusetts Institute of Technology, 1974.

The Department of Linguistics offers graduate work leading to the Ph.D. degree; a small number of students are also admitted for work leading to the M.A. degree. Students may concentrate their graduate work in any of the following areas: syntax, semantics, phonology, diachronic linguistics, psycholinguistics, formal foundations of linguistic theory, particular languages or language families, and prosody, metrics, and stylistics. The Department of Linguistics teaches English as a Foreign Language for foreign graduate students, but does not offer any courses in the Teaching of English as

## LINGUISTICS

## GRADUATE SCHOOL

a Foreign Language. Graduate training in the Department of Linguistics is strongly oriented toward preparing students to carry on individual creative research as early as possible in their graduate careers, and the Graduate Program is set up so as to maximize close student-faculty contact. The requirements for the M.A. and Ph.D. degrees listed below are subject to periodic review; students are therefore advised to check with the Department for any changes in requirements.

### THE MASTER OF ARTS DEGREE PROGRAM

*Prerequisites for admission:* A B.A. or B.S. degree in nearly any field of undergraduate study. The following undergraduate fields from a useful background to linguistics: anthropology, computer science, English, a foreign language or language family, logic, mathematics, philosophy, psychology, and sociology. A student may be required to make up deficiencies in undergraduate training before being admitted to regular status.

*Program of study:* Thirty credit hours of graduate work, in which the following courses would normally be included: Linguistics 701, Linguistics 702, Linguistics 502, and other core courses. Certain courses may be waived on the basis of previous work.

*Examination and Thesis:* A thesis is not required to complete the M.A. M.A. examinations will cover significant areas of graduate work in linguistics.

### THE DOCTOR OF PHILOSOPHY DEGREE PROGRAM

*Prerequisites for Admission:* A B.A., B.S., or M.A. degree.

*Program of Study:* Forty-eight credits of graduate work, at least half of which consist of 700-level linguistics courses.

*Language requirement:* There is no formal language requirement in the Ph.D. program. (However, students are generally expected to be able to read relevant journal articles in a foreign language.) Students are also strongly encouraged to carry out linguistic research on a foreign language as part of their graduate work.

*Examinations:* Ph.D. candidates must satisfy the general examination requirement by submitting two linguistic papers, embodying the student's original research, in two distinct areas of the discipline. A final oral examination is held after the doctoral dissertation is submitted.

*Dissertation:* A dissertation is required.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY

**700. SPECIAL PROBLEMS.**  
Selected research problems in Linguistics. *Credit, 1-12.*

**701. INTENSIVE INTRODUCTION TO TRANSFORMATIONAL GRAMMAR.**  
An intensive introduction to the concepts of transformational grammar. Survey in depth of problems and methods of research, with emphasis on different types of linguistic evidence and argument. *Credit, 6.*

**702. INTRODUCTION TO THE STUDY OF AN UNFAMILIAR LANGUAGE.**  
Investigation, with the aid of an informant, of the structure of an unfamiliar language and of specific analytical problems

it presents. The relevance of these to universal grammar.  
*Prerequisite, Ling 701. Mr. Bach.*

**703. GENERATIVE PHONOLOGY.**  
Introduction to generative phonology primarily for graduate students in linguistics. The formalism is developed and justified in response to increasingly complex sets of data.  
*Prerequisites, Ling 701, 514. Mr. Keyser, Ms. Selkirk.*

**704. SYNTACTIC THEORY.**  
Advanced survey of problems in the syntax of natural language encountered in attempting to characterize formally the notion of "grammar of a natural language."  
*Prerequisite, Ling 701. Mr. Bach, Ms. Bresnan, Ms. Partee, Ms. Selkirk.*

**705. DIACHRONIC LINGUISTICS.**  
Topics from traditional historical linguistics from the standpoint of transformational generative grammar: language change, relative chronology of sound changes, comparative method, internal reconstruction, and linguistic universals.  
*Prerequisite: Ling 701. Mr. Keyser.*

**706. PHONOLOGICAL THEORY.**  
The investigation of issues in current generative phonological theory. Students construct theoretical arguments using original evidence.  
*Prerequisites: Ling 701, 703. Mr. Keyser, Ms. Selkirk.*

**707. UNIVERSAL GRAMMAR.**  
Universal principles of natural language. Universal hypotheses made to date in the development of linguistic theory.  
*Prerequisites, Ling 701, 702. Mr. Bach.*

**708. STRUCTURE OF ENGLISH.**  
An intermediate-level survey of problems in the syntax of English, designed to follow directly from Ling 701.  
*Prerequisite, Ling 701. Mr. Bach, Ms. Bresnan, Ms. Partee.*

**710. SEMANTICS AND GENERATIVE GRAMMAR.**  
A comprehensive survey of semantic problems in transformational-generative linguistics. Feature theory, generative semantics, performatives, interpretation of derived structures, semantic theory of truth, interpretation and logic of human language.  
*Mr. Bach, Ms. Bresnan, Ms. Partee.*

**711. PSYCHOLINGUISTICS: LANGUAGE ACQUISITION.**  
The theoretical foundations and methodology of the study of child language. The relationship between language acquisition, the study of universal grammar, and theoretical psychology. An experimental term project is customary.  
*Prerequisite, Ling 701. Mr. Roeper.*

**712. PSYCHOLINGUISTICS: THE PERCEPTION OF LINGUISTIC FORM.**  
An introduction to psycholinguistics concentrating on the psychological perception of linguistic form. The psychological reality of linguistic models and perceptual and learning strategies.  
*Prerequisite, Ling 701. Mr. Roeper.*

**713. LINGUISTICS AND LITERATURE.**  
The application of modern linguistics to literary analysis. Meter, style, and explication of text on the basis of linguistic criteria.  
*Mr. Freeman, Mr. Keyser.*

**714. CONTEMPORARY PHONETICS.**  
Phonetics and the theory of language. Universal phonetic alphabet, acoustic phonetics, perceptual phonetics, articulatory phonetics and distinctive features.  
*Prerequisite, Ling 701 or permission of instructor.*

**715. THEORY OF GRAMMAR.**  
Survey and comparison of theories of language. Structural linguistics, stratificational grammar, scale-and-category grammar, transformational-generative grammar. The nature of linguistic evidence.  
*Prerequisite, Ling 701 or permission of instructor. Mr. Bach, Mr. Freeman, Mr. Keyser.*



## UNIVERSITY OF MASSACHUSETTS

## LINGUISTICS

### 716. DIALECTOLOGY.

The geographical and cultural variations within a language; mapping of dialects. Analysis and interpretation of dialect materials.

### 726. MATHEMATICAL LINGUISTICS.

Topics relating mathematics, logic, computer science and linguistic theory. Typical topics: grammars and automata, formal models of transformational grammar; syntax-directed compilers.

Prerequisites: Ling 509 or Math 200 or COINS 201.  
Mr. Bach, Ms. Bresnan, Ms. Partee.

### 740. STRUCTURE OF AN AFRICAN LANGUAGE.

### 741. STRUCTURE OF AN AMERICAN INDIAN LANGUAGE.

### 742. STRUCTURE OF AN INDO-EUROPEAN LANGUAGE.

### 743. STRUCTURE OF A MALAYO-POLYNESIAN LANGUAGE.

### 744. STRUCTURE OF A FINNO-UGRIC LANGUAGE.

### 745. STRUCTURE OF A NEAR EASTERN LANGUAGE.

### 746. STRUCTURE OF AN ORIENTAL LANGUAGE.

### 747. STRUCTURE OF A SOUTH EAST ASIAN LANGUAGE.

### 748. STRUCTURE OF A NON-INDO-EUROPEAN LANGUAGE.

The phonology and syntax of a language other than English. Emphasis on the application of current linguistic theory to analytical problems presented by that language and the testing of current theoretical hypotheses by reference to those problems. An informant will generally be used. Within each of these courses, languages vary from year to year; any of them may be repeated for credit.  
Prerequisites: Ling 702, 703.

### 750. TOPICS IN LINGUISTIC THEORY.

Treatment in depth of a selected area of linguistic theory. Topics vary. May be repeated for credit.  
Prerequisite, permission of instructor.

### 751. TOPICS IN PHONOLOGY.

Advanced, intensive work on specific phonological problems, or on the phonology of a single language or of a small group of languages.  
Prerequisites: Ling 703, 706.

### 752. TOPICS IN SYNTAX.

An intensive review of current research in syntactic theory, with emphasis on individual student research in syntactic theory.  
Prerequisite: Ling 704.

### 753. TOPICS IN SEMANTICS.

Intensive investigation of topics in semantics. Topics vary from year to year.  
Prerequisite: Ling 710.

### 754. TOPICS IN DIACHRONIC LINGUISTICS.

An advanced seminar, mainly for those students who wish to specialize in language change. Investigation of the empirical claims made by current transformational theory in regard to language change.  
Prerequisites: Ling 703, 705.

### 790. SEMINAR.

Current research topics and literature.

### 910. RESEARCH TUTORIAL: SYNTAX.

Intensive investigation of a previously unexplored topic in syntax under close faculty supervision. Topic varies from year to year.

### 820. RESEARCH TUTORIAL: PHONOLOGY.

Intensive investigation of a previously unexplored topic in phonology under close faculty supervision. Topic varies from year to year.

### 830. RESEARCH TUTORIAL: LINGUISTIC THEORY.

Intensive investigation of a previously unexplored topic in linguistic theory under close faculty supervision. Topic varies from year to year.

### 900. DOCTORAL DISSERTATION. *Credit, 18*

### COURSES OPEN TO UNDERGRADUATES AND GRADUATES (for either major or minor credit).

### 561. INTRODUCTION TO LINGUISTIC THEORY.

The nature of language; in-depth study of important aspects of the structure of the native language, from the standpoint of modern linguistic theory. Emphasis on syntactic problems; some attention to phonology, language acquisition, etc.

### 502. PHONOLOGICAL THEORY.

Introduction to the theoretical and psychological bases of contemporary phonological analysis; the concepts of distinctive feature analysis. Natural phonological processes illustrated by problems chosen from languages of the world.  
Prerequisites: Ling 201/501 and 214/514.

Mr. Heny, Mr. Keyser, Ms. Selkirk.

### 503. INTRODUCTORY SYNTAX.

The principles of contemporary linguistic theory applied to specific syntactic problems drawn mostly from English. The theoretical implications of the selected problems discussed in depth.

Prerequisite: Ling 201/501.

Mr. Bach, Ms. Bresnan, Mr. Keyser, Ms. Partee.

### 504. FIELD METHODS.

Methods of eliciting significant linguistic information in the field. How to work with an informant. Investigation, with the aid of the informant, of the structure of an unfamiliar language and of specific analytical problems it presents.

Mr. Bach, Mr. Heny.

### 509. FORMAL FOUNDATIONS OF LINGUISTIC THEORY.

Topics in formal systems as they relate to modern linguistic theory, including set theory, group theory, automata theory and formal grammars.

Prerequisite: Ling 201. Ms. Bresnan, Ms. Partee.

### 510. INTRODUCTION TO SEMANTICS.

Survey of semantics in relation to transformational theory. Application of formal logic and connections with philosophy of language. Emphasis typically on quantification, referential opacity, other structural problems.

Prerequisites: Ling 203, Phil 370.

Mr. Bach, Ms. Bresnan, Ms. Partee.

### 511. INTRODUCTION TO PSYCHOLINGUISTICS.

Introduction to psycholinguistics: theoretical foundations, methodology, and experimental techniques. Emphasis on the acquisition of language, child language and linguistic universals, and learning and perceptual strategies.

Prerequisite: Ling 201. Mr. Roeper.

### 513. SOCIOLINGUISTICS.

Language as a social phenomenon. Linguistic, sociological and ethical issues related to language in its social context. The social interpretation of optional grammatical rules in dialectal variation.

Mr. Roeper.

### 514. INTRODUCTORY PHONETICS FOR LINGUISTS.

Principles of the International Phonetic Association. Phonetic script. Identifying and making unfamiliar sounds. The structure of the vocal tract.

*Credit, 1.* Mr. Heny.

### 623. STUDY OF THE NATIVE LANGUAGE.

The relevance of linguistic theory and results of linguistics to

## MARINE SCIENCES

the study of English. Issues of style, poetics, the teaching of English, and others. Mr. Freeman, Mr. Keyser.

COURSE OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

410. ENGLISH FOR FOREIGN STUDENTS. Credit, 0.

## Manufacturing Engineering

### GRADUATE FACULTY

GEOFFREY BOOTHROYD, *Professor and Chairman of the Manufacturing Engineering Program*, B. Sc., University of London, 1957; Ph.D., University of London, 1962; D.Sc., 1974.

WILLIAM J. DUFFY, *Associate Professor*, B.S., University of Michigan, 1955; M.S., 1969; Ph.D., 1971.

LAURENCE MURCH, *Assistant Professor*, B.S., Northeastern, 1965; M.S., Clarkson College of Technology, 1968; Ph.D., Massachusetts, 1972.

CORRADO R. POLI, *Professor*, B.S., Rensselaer Polytechnic Institute, 1957; M.S., 1958; Ph.D., Ohio State, 1965.

WILLIAM R.D. WILSON, *Associate Professor*, B.S., Queens University of Belfast, 1963; Ph.D., 1967.

### PROGRAM IN MANUFACTURING ENGINEERING

The Master of Science program in Manufacturing Engineering is designed to meet the needs of those graduates in Mechanical or Industrial Engineering or in other disciplines who are interested in Manufacturing Engineering.

Manufacturing Engineers are those concerned with the planning and selection of methods of manufacture, the design of equipment for manufacture, the improvements of established manufacturing techniques and the development of new ones.

The program contains a common core and two alternative sections; the section depends on the student's background. Students already prepared in any of the required courses may substitute an appropriate elective course.

### REQUIREMENTS

#### Common Core

|                                                    |           |
|----------------------------------------------------|-----------|
| MAE 520 Machining and Machining Tools              | Credits 3 |
| MAE 521 Automation in Manufacturing                | 3         |
| IE 755 Quality Control and Reliability Engineering | 3         |
| IE 690 Human Factors in Manufacturing Engineering  | 3         |
| IE/ME 790 Project (or IE/ME 800 Thesis if desired) | 6         |
| 3 Electives                                        | 9         |

#### Remaining Courses

Credits

(For students with an I.E. background)

## GRADUATE SCHOOL

|                                                                                    |   |
|------------------------------------------------------------------------------------|---|
| MAE 535 Manufacturing Processes                                                    | 3 |
| MAE 537 Manufacturing Processes Laboratory (For students with and M.E. background) | 1 |
| IE 700 Probability and Statistics                                                  | 3 |

### Suggested 3-Credit Electives

|                                               |   |
|-----------------------------------------------|---|
| IE 573 Introduction to Simulation Methods     | 3 |
| IE 678 Production Planning and Control        | 3 |
| IE 777 Manufacturing Control                  | 3 |
| IE 754 Advanced Topics in Engineering Economy | 3 |
| MAE 585 Vibrations and Control                | 3 |
| MAE 554 Product Design I                      | 3 |
| MAE 780 Metal Forming Processes               | 3 |
| MAE 608 Physical Metallurgical Principles     | 3 |
| MAE 709 Mechanical Properties of Materials    | 3 |

### Note

IE courses are listed under Industrial Engineering  
MAE courses are listed under Mechanical Engineering

In addition all students must satisfy the Graduate School's requirements for the Master's Degree.

## Marine Sciences

### GRADUATE FACULTY

MICHAEL N. KREISLER, *Acting Chairman of the Marine Sciences Program and Associate Dean of the Graduate School*.

DAYTON E. CARRITT, *Professor of Geology*.

CHARLES F. COLE, *Professor of Fisheries Biology*.

D. CRAIG EDWARDS, *Associate Professor of Zoology*.

DENTON B. HARRIS, *Assistant Professor of Civil Engineering and Coordinator of the Ocean Engineering Program*.

ALAN W. NIEDORODA, *Assistant Professor of Geology and Director of the Coastal Research Center*.

EDWARD A. PERRY, *Associate Professor of Geology*.

GREGORY W. WEBB, *Professor of Geology*.

ROBERT T. WILCE, *Professor of Botany*.

JOHN W. ZAHRADNIK, *Professor of Mechanical Engineering and Principal Scientist, Aquacultural Engineering Laboratory, Wareham*.

The interdisciplinary program in Marine Sciences leads to the Master of Science degree, enabling the student to go directly into marine research, industry or public service, or to continue work for the Ph.D. degree in one of the specialty fields. The program includes a core curriculum of biological, chemical, geological, and physical oceanography. In addition to the areas of the core curriculum, the following areas of concentration are also available: Aquaculture, Botany, Fisheries, Nutrition and Food Sciences, Ocean Engineering, and Zoology. It is conducted on the Amherst campus, the Marine Station in Gloucester, the Aquacultural Engineering Laboratory in Wareham and at selected coastal sites. The primary research emphasis is presently in estuarine and coastal waters.

## UNIVERSITY OF MASSACHUSETTS

Students entering the Marine Sciences program should have completed an undergraduate degree in science or engineering. Acceptance to the program involves admission to the Graduate School of the University and admission by the Graduate Faculty Committee of the Marine Sciences program.

NOTE: No new students will be admitted to this program until further notice.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### Courses for Students in Other Programs

##### 525. INTRODUCTORY OCEANOGRAPHY.

A survey of the oceans and sea water, the substrate, marine life, and processes; oceanographic techniques. For students in engineering and others desiring a general knowledge of the sea.

701/702. MARINE SCIENCE SEMINAR. *Credit, 1.*

#### Core Courses

##### GEOLOGY 655. PHYSICAL OCEANOGRAPHY.

Physics of water masses and ocean circulation; waves, tides and current dynamics; techniques of oceanographic study. Prerequisite, one year of college physics; calculus recommended. Mr. Niedoroda.

##### GEOLOGY 752. GEOLOGICAL OCEANOGRAPHY.

Physical characteristics and geological processes of the ocean basins and margins, and their bearing on interpretation of geological history. Mr. Webb.

##### 530. CHEMICAL OCEANOGRAPHY.

The chemical properties of the ocean that influence and are influenced by marine physical, biological and geological systems. Prerequisites, one-year college-level chemistry, physics, and mathematics. Mr. Carritt.

#### Optional Specialty Courses

700. SPECIAL PROBLEMS. *Credit, 1-6.*

##### 710. TOPICS IN MARINE CHEMISTRY.

The present state and trends in a few segments of marine chemistry by reading of contemporary literature and contact with visiting scientists. Prerequisite, graduate standing in a science or engineering department, or permission of instructor. Pre-enrollment interview requested. Mr. Carritt.

MARINE SCIENCE 800. THESIS. *Credit, 1-6.*

(Other optional courses are listed under the headings of the several cooperating departments.)

## Mathematics and Statistics

### GRADUATE FACULTY

JIN CHEN SU, *Professor and Acting Head of the Department of Mathematics and Statistics*, B.S., National Taiwan University, 1954; Ph.D., University of Pennsylvania, 1962.

FRANKLIN A. WATTENBERG, *Associate Professor and Graduate Program Director*, B.S., Wayne State, 1964. M.S., University of Wisconsin, 1965; Ph.D., 1968.

STEPHEN I. ALLEN, *Associate Professor*, B.A., Amherst College, 1937; M.A., Harvard University, 1946; Ph.D., University of Pittsburgh, 1963.

## MATHEMATICS AND STATISTICS

MARY KATHERINE BENNETT, *Associate Professor*, B.A., Albertus Magnus College, 1961; M.A., Massachusetts, 1965; Ph.D., 1966.

JOSEPH T. BORREGO, JR., *Associate Professor*, B.A., University of Florida, 1961; M.S., 1962; Ph.D., 1966.

DONALD E. CATLIN, *Associate Professor*, B.S., Pennsylvania State, 1958; M.A., 1961; Ph.D., University of Florida, 1965.

EDUARDO H. CATTANI, *Assistant Professor*, Universidad de Buenos Aires, Licenciado en Matemáticas, 1967; Ph.D., Washington University, 1972.

CHAN-NAN CHIANG, *Assistant Professor*, B.S., National Taiwan University, 1963; Ph.D., Notre Dame, 1970.

YU W. CHEN, *Professor*, Ph.D., University of Goettingen, Germany, 1934.

JACK CLARK, *Assistant Professor*, B.S., Massachusetts Institute of Technology, 1964; M.S., Stanford, 1966; Ph.D., 1972.

HASKELL COHEN, *Professor*, B.A., University of Omaha, 1942; S.M., University of Chicago, 1947; Ph.D., Tulane, 1952.

EDWARD A. CONNORS, *Associate Professor*, B.A., Holy Cross, 1962; M.A., Massachusetts, 1964; Ph.D. Notre Dame, 1968.

THURLOW A. COOK, *Assistant Professor*, B.A., University of Rochester, 1961; M.A., University of Buffalo, 1963; Ph.D., Florida State, 1967.

HELEN F. CULLEN, *Professor*, B.A., Radcliffe, 1940; M.A., Michigan, 1944; Ph.D., 1950.

RAM C. DAHIYA, *Associate Professor*, B.A., Panjab University, 1962; M.A., University of Delhi, 1964; M.S., Wisconsin, 1967; Ph.D., 1970.

DAVID J. DICKINSON, *Associate Professor*, B.A., University of Denver, 1942; M.A., Columbia, 1948; Ph.D., Michigan, 1954.

MURRAY EISENBLRG, *Associate Professor*, B.A., University of Pennsylvania, 1960; M.A., 1962; Ph.D., Wesleyan, 1965.

RICHARD S. ELLIS, *Assistant Professor*, B.A., Harvard, 1969; M.S., New York, 1971; Ph.D., 1972.

HANS R. FISCHER, *Professor*, University of Zurich, Matriculation, 1952; Ph.D., 1959.

JOHN FOGARTY, *Associate Professor*, B.A., Harvard, 1961; Ph.D., 1966.

DAVID J. FOLIS, *Professor*, B.A., Miami, 1952; M.S., 1953; Ph.D., Tulane, 1958.

MICHAEL A. GAUGER, *Assistant Professor*, B.S., Notre Dame, 1967; Ph.D., 1971.

DONALD GEMAN, *Associate Professor*, B.A., Illinois, 1965; Ph.D., Northwestern, 1970.

ALAN GLEIT, *Associate Professor*, B.A., Harvard, 1965; M.S., Stanford, 1967; Ph.D., 1969.

DAVID R. HAYES, *Professor*, B.A., Duke, 1959; Ph.D., 1963.

DAVID A. HOFFMAN, *Assistant Professor*, A.B., University of Rochester, 1966; M.Sc., Stanford, 1968; Ph.D., 1971.



## MATHEMATICS AND STATISTICS

SAMUEL S. HOLLAND, JR., *Professor*, B.A., Massachusetts Institute of Technology, 1950; M.S., Chicago, 1952; Ph.D., Harvard, 1961.

JOSEPH HOROWITZ, *Associate Professor*, B.S., Massachusetts Institute of Technology, 1962; M.S., University of Michigan, 1963; Ph.D., 1967.

JAMES E. HUMPHREYS, *Professor*, A.B., Oberlin, 1961; A.M., Yale, 1964; Ph.D., 1966.

NORMAN E. HURT, *Assistant Professor*, Ph.D., University of Chicago, 1967.

HENRY G. JACOB, *Professor*, B.E., Yale, 1943; M.E., 1947; Ph.D., 1953.

MELVIN JANOWITZ, *Professor*, B.A., University of Minnesota, 1950; Ph.D., Wayne State, 1963.

AROLDO G. KAPLAN, *Assistant Professor*, Licenciado, University of Cordoba, 1964; Ph.D., Washington University, 1971.

ELEANOR KILLAM, *Assistant Professor*, B.S., New Hampshire, 1955; M.S., 1956; Ph.D., Yale, 1961.

GEORGE H. KNIGHTLY, *Professor*, B.S., Tufts, 1956; M.S., Stanford, 1962; Ph.D., 1965.

RAMESH M. KORWAR, *Assistant Professor*, B.A., Karnatak University, 1957; M.A., 1959; M.S., Florida State, 1969; Ph.D., 1972.

Hsu-TUNG KU, *Associate Professor*, B.S., Taiwan Normal University, 1961; M.S., Tulane, 1964; Ph.D., 1967.

MEI-CHIN KU, *Associate Professor*, B.S., Taiwan Normal University, 1961; M.S., Syracuse, 1964; Ph.D., Tulane, 1967.

ESAYAS G. KUNDERT, *Professor*, Diploma, E.T.H., Zurich, 1945; Ph.D., 1950.

LORRAINE D. LAVALLEE, *Associate Professor*, B.A., Mount Holyoke, 1953; M.A., Massachusetts, 1955; Ph.D., University of Michigan, 1962.

TENG-SUN LIU, *Professor*, B.S., National Taiwan University, 1954; M.A., University of Pennsylvania, 1961; Ph.D., 1963.

ERNEST G. MANES, *Assistant Professor*, B.S., Harvey Mudd College, 1963; Ph.D., Wesleyan, 1967.

LARRY N. MANN, *Professor*, B.A., University of Pennsylvania, 1955; M.S., 1956; Ph.D., 1959.

WALLACE S. MARTINDALE, III, *Professor*, B.A., Amherst, 1952; M.A., University of Pennsylvania, 1954; Ph.D., 1958.

PETER NORMAN, *Assistant Professor*, B.A., Harvard, 1965; Ph.D., University of Pennsylvania, 1971.

GAIL B. OAKLAND, *Professor*, B.A., University of Saskatchewan, 1933; M.A., Minnesota, 1939; Ph.D., University of Aberdeen, 1956.

CHARLES H. RANDALL, *Professor*, B.S.M.E., Polytechnic Institute of Brooklyn, 1951; M.S., University of Pittsburgh, 1957; Ph.D., Rensselaer Polytechnic Institute, 1966.

ELLEN E. REED, *Associate Professor*, B.A., Gonzaga University, 1962; M.A., University of Colorado, 1964;

WALTER A. ROSENKRANTZ, *Professor*, B.S., University of Chicago, 1955; M.S., Illinois, 1959; Ph.D., 1963.

ARUNAS RUDVALIS, *Associate Professor*, B.S., Harvey

## GRADUATE SCHOOL

Mudd College, 1965; M.A., Dartmouth, 1967; Ph.D., 1969.

DONALD F. ST. MARY, *Assistant Professor*, B.S., McNeese State, 1962; M.A., University of Kansas, 1964; Ph.D., University of Nebraska, 1968.

BERTHOLD SCHWEIZER, *Professor*, B.S., Massachusetts Institute of Technology, 1951; M.S., Illinois Institute of Technology, 1954; Ph.D., 1956.

HOWARD C. SHAW, *Assistant Professor*, B.S., Massachusetts Institute of Technology, 1968; M.A., Michigan, 1971; Ph.D., 1975.

JON L. SICKS, *Associate Professor*, B.A., Indiana University, 1961; Ph.D., 1965.

MORRIS SKIBINSKY, *Professor*, B.S., City College of New York, 1948; M.A., University of North Carolina, 1951; Ph.D., 1954.

DORIS S. STOCKTON, *Associate Professor*, B.S., Douglass College in Rutgers University, 1945; M.S., Brown, 1947; Ph.D., 1959.

MARSHALL H. STONE, *Professor*, B.A., Harvard, 1922; M.A., 1924; Ph.D., 1926.

WAYMAN L. STROTHER, *Professor*, B.S., Alabama State, 1943; M.S., University of Chicago, 1949; Ph.D., Tulane, 1951.

ROBERT W. WAGNER, *Professor*, B.A., Ohio, 1934; M.A., University of Michigan, 1935; Ph.D., 1937.

JU-KWEI WANG, *Professor*, B.S., National Taiwan University, 1954; Ph.D., Stanford, 1960.

GEORGE W. WHAPPLES, *Professor*, B.A., Knox College, 1935; M.A., Wisconsin, 1937; Ph.D., 1939.

FLOYD L. WILLIAMS, *Assistant Professor*, B.S., Lincoln University, 1962; Ph.D., Washington University, 1964.

JOEL ZINN, *Assistant Professor*, B.A., Queen's College, CUNY, 1966; M.A., University of Wisconsin, 1969; Ph.D., 1972.

The Department of Mathematics and Statistics offers programs leading to both the Master of Arts and Doctor of Philosophy degrees. These programs allow the student considerable flexibility in selecting a course of study which emphasizes a broad knowledge of mathematics and its applications as well as concentration within one or more of the areas of algebra, analysis, applied mathematics, probability and statistics, and topology. A detailed description of degree requirements may be obtained from the departmental Graduate Program Director.

### THE DOCTOR OF PHILOSOPHY DEGREE PROGRAM

*Admission.* Applications for admission to the Ph.D. program are screened by a departmental committee, which bases its recommendations for admissions and financial aid on the applicant's undergraduate record, letters of recommendation, GRE scores, and other data. Admission is highly selective, and there is no minimal set of courses or grades that will guarantee admission. Applicants are encouraged to submit additional data on their mathematical training, such as texts used and topics covered in courses, details of any honors projects or individual reading, etc.

*Course requirements.* The doctoral aspirant must successfully complete 36 credits in graduate courses,

including: (a) year-long courses in three of the basic areas of algebra, analysis, applied mathematics, statistics-probability, and topology, together with a semester course in each of the other two basic areas (courses in other departments may be approved to satisfy the applied mathematics requirement); (b) a semester of complex analysis; (c) a "special" course (from among those so designated each semester) whose purpose is to pose and solve a specific, often classical, problem by developing the requisite mathematical tools, but not necessarily in their most general or finished form.

**Qualifying Examination.** Each year a written examination will be offered in each of the areas of algebra, analysis, applied mathematics, statistics-probability and topology. To qualify for the Ph.D., the student entering with a Bachelor's (Master's) degree must pass the examination in three of these areas by the end of the third (second) year of graduate study in the department.

**Preliminary Comprehensive Examination.** Once the student has passed the Qualifying Examination, to be admitted to Ph.D. candidacy he or she must pass the Preliminary Comprehensive Examination. This examination, which is oral, is based on material dealing with a central theme related to the student's prospective area of concentration.

**Foreign language requirement.** For the Ph.D. the department requires a reading knowledge of two of the following languages: French, German, and Russian at the Graduate School's level 3—sufficient to understand mathematical or statistical journal articles in the language. The requirement in each of the two languages may be satisfied either by passing one of the written examinations offered by the department each year, or by successfully completing in the department a semester course or seminar in which the lectures or source materials are in the foreign language.

As a requirement for the Ph.D. degree, all students in the doctoral program are expected to gain experience in communicating their subject by participating in the instruction of students. This requirement may be satisfied by performing the duties ordinarily assigned to a Teaching Assistant or Teaching Associate, but the precise kind and extent of activities necessary to satisfy it will be determined on an individual basis for each doctoral student.

Each year a variety of advanced seminars, including joint seminars with other departments or with nearby institutions, are available for credit. Students are encouraged to attend the departmental Colloquium, which meets regularly and where visiting speakers present topics of current research.

#### THE MASTER'S DEGREE PROGRAM

An entering Master's candidate should normally have completed at least 18 semester credit hours in undergraduate mathematics and statistics beyond the calculus. A one-year course in linear and modern algebra and a one-year course in advanced calculus would be highly desirable.

Within the Master's program the department offers a Mathematics Option and a Statistics Option. Differences in the Master's degree requirements under the two options are stated below.

To earn a Master's degree a student must:

(1) Complete 30 credit hours, at least 18 of which must be in courses in the department numbered 700 or above. Any course outside the department or num-

bered below 700 must have departmental approval to be included in these 30 credit hours. The student must earn an average grade of B, and may include at most 6 credit hours with a grade below B in the courses presented to satisfy this requirement. Within the Mathematics Option these courses must include one "special" course (see Ph.D. course requirement (c) above) and the first semester of the basic course in each of three of the areas of algebra, analysis, applied mathematics, statistics-probability, and topology. Within the Statistics Option these courses must include Statistics 706, 12 additional credit hours of courses in probability and statistics numbered 700 or above, the first semester of the basic course in each of two of the areas of algebra, analysis, applied mathematics and topology, and a 3-credit-hour project in statistics.

(2) Pass the Master's examination. Every year the department offers a written examination at the Master's level in each of the basic areas. To pass the Master's examination under the Mathematics Option the student must either pass the examinations in three of the areas of algebra, analysis, applied mathematics, statistics-probability, topology, or else pass the Ph.D. written Qualifying Examination. To pass the Master's examination under the Statistics Option the student must pass a series of two examinations in probability and statistics.

There is neither a thesis requirement nor a foreign language requirement for the Master's degree. A Master's candidate who has not completed the degree requirements by the end of his second year will ordinarily not be permitted to re-register in the department.

#### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

##### COURSES OPEN TO GRADUATE STUDENTS ONLY

##### Mathematics Courses

###### 700. SPECIAL PROBLEMS

Topics may be chosen from the fields of algebra, geometry, theory of functions, topology, and applied mathematics. Prerequisite, permission of instructor. Credit, 1-3.

###### 701 (I), 702 (II). TOPICS IN ALGEBRA.

Basic topics in algebra. Prerequisite, permission of instructor. Credit, 1-3 each semester.

###### 703 (I), 704 (II). TOPICS IN GEOMETRY.

Basic topics in geometry. Prerequisite, permission of instructor. Credit, 1-3 each semester.

###### 705 (I), 706 (II). TOPICS IN ANALYSIS.

Basic topics in analysis. Prerequisite, permission of instructor. Credit, 1-3 each semester.

###### 711. ALGEBRA I.

Linear algebra via the theory of modules over principal ideal rings; Jordan decomposition, canonical forms, spectral theorem. Tensor products, symmetric and exterior algebras. Determinants, Cayley-Hamilton theorems, application to geometry.

###### 712. ALGEBRA II.

Either topics from field theory, Noetherian rings, and applications, or topics from rings with chain conditions, groups, and group representations. Prerequisite, Math 711 or equivalent.

## MATHEMATICS AND STATISTICS

### 713. INTRODUCTION TO ALGEBRAIC NUMBER THEORY.

Valuations, rings of integral elements, ideal theory in algebraic number fields of algebraic functions of one variable, Dirichlet-Hasse unit theorem and Riemann-Roch theorem for curves.

Prerequisite, Math 711-712 or equivalent.

### 714. QUADRATIC FORMS.

Quadratic spaces, orthogonal group, representation and equivalence of quadratic forms over arithmetic fields, Hasse-Minkowski theorem, integral theory of quadratic forms over arithmetic domains, genus, spinor genus.

Prerequisites, Math 711-712 and 713 or equivalents.

### 715 (I), 716 (II). CLASS FIELD THEORY.

Local class field theory, residues in fields of algebraic functions, global class field theory, generalized local class field theory, application to simple algebras and quadratic forms.

Prerequisite, Math 713. *Credit, 3 each semester.*

### 721. COMPLEX ANALYSIS.

Complex number field, elementary functions, holomorphic functions, integration, power and Laurent series, harmonic functions, conformal mappings, applications.

### 722. INTERMEDIATE COMPLEX ANALYSIS.

Topics from intermediate complex analysis.

Prerequisite, Math 721 or equivalent.

### 723. REAL ANALYSIS I.

Lebesgue measure and Lebesgue integration, differentiation, and  $L_p$  spaces.

### 724. REAL ANALYSIS II.

Abstract measure theory, probability, Lebesgue-Stieltjes integration, Radon-Nikodym Theorem, weak convergence of measures, central limit theorem.

Prerequisite, Math 723.

### 725. INTRODUCTION TO FUNCTIONAL ANALYSIS.

Banach and Hilbert spaces, continuous linear operators, spectral theory, Banach algebras.

Prerequisites, Math 723 or 705.

### 726. FUNCTIONAL ANALYSIS.

Topics from Banach algebras and representation theorems for Banach algebras; von Neumann algebras; analysis in Banach algebras, spectral theory; analytical theory of semigroups; vector lattices, Krein-Milman theorem.

### 731 (I), 732 (II). INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS.

Equations in mathematical physics, types of systems, characteristic manifolds, questions of uniqueness and existence, generalized derivatives.

Prerequisite, Math 626. *Credit, 3 each semester.*

### 735. LATTICE THEORY I.

Partially ordered sets, lattices, modular lattices, Boolean algebras, representation theory for lattices.

Prerequisite, Math 512.

### 736. LATTICE THEORY II

Continuation of Math 735. Stone's representation theorem for Boolean algebras, Loomis' representation theorem for Boolean sigma-algebras, theory of orthomodular lattices and their coordinating Baer\*-semigroups.

Prerequisite, Math 735.

745 (I), 746 (II). ADVANCED APPLIED MATHEMATICS. Topics from engineering and mathematical physics presented rigorously and with free use of abstract mathematical concepts and modern mathematical machinery.

Prerequisite, permission of instructor.

*Credit, 3 each semester.*

### 771. TOPOLOGY I.

Compactness, local compactness, compactification, products, quotients, separation axioms, theory of retracts, connected-

## GRADUATE SCHOOL

ness, continua, path connectedness, local connectedness, fundamental group, covering spaces.

### 772. TOPOLOGY II.

Introduction to the topology and geometry of differentiable manifolds.

Prerequisite, Math 771.

### 773. ALGEBRAIC METHODS IN TOPOLOGY.

Topics from homotopy, homology, and cohomology with applications.

Prerequisite, Math 771.

### 781. ALGEBRAIC TOPOLOGY I.

Homotopy theory, simplicial and Čech homology theories.

Prerequisites, Math 771, 711.

### 782. ALGEBRAIC TOPOLOGY II.

General homology theory, universal coefficient theorems, singular homology theories, ring structure in cohomology theories, spectral sequences, Steenrod operations.

Prerequisite, Math 781.

### 803. ADVANCED TOPICS IN ALGEBRAIC TOPOLOGY.

Presheaves and sheaves, sheaf cohomology, Čech cohomology, applications; deRham theorem; spectral sequences.

Prerequisite, Math 782.

### 811 (I), 812 (II). ADVANCED ALGEBRA.

Advanced topics in algebra.

Prerequisite, permission of instructor.

*Credit, 3 each semester.*

### 821 (I), 822 (II). ADVANCED COMPLEX ANALYSIS.

Advanced topics in complex analysis.

Prerequisite, permission of instructor.

*Credit, 3 each semester.*

### 823 (I), 824 (II). ADVANCED ANALYSIS.

Advanced topics in analysis.

Prerequisite, permission of instructor.

*Credit, 3 each semester.*

### 831 (I), 832 (II). ADVANCED ORDINARY OR PARTIAL DIFFERENTIAL EQUATIONS.

Advanced topics chosen from dynamic systems, differential operators with constant coefficients, hyperbolic and elliptic operators, non-linear equations, asymptotic expansions.

Prerequisite, permission of instructor.

*Credit, 3 each semester.*

### 835. ADVANCED LATTICE THEORY I.

Advanced topics chosen from the fields of orthomodular lattices, quasi-orthomodular lattices, continuous geometries, complemented modular lattices, and their representation theories.

Prerequisite, Math 736.

### 836. ADVANCED LATTICE THEORY II.

Continuation of Math 835. One or more of the topics of Math 835 examined in detail up to the present frontiers of knowledge.

Prerequisite, Math 835.

### 852 (I), 852 (II). DIFFERENTIAL TOPOLOGY.

Differential manifolds, immersions and imbeddings; Whitney approximation theorems; vector bundles; tangent and normal bundles; characteristic classes and cobordism.

Prerequisites, Math 772 and 781. *Credit, 3 each semester.*

### 853 (I), 854 (II). TOPOLOGICAL SEMIGROUPS.

Topics: from ideals in semigroups, Green's relations, Rees-Suschkewitsch theorem, semigroup structures on continua, homomorphisms, irreducible semigroups, actions by semigroups, and other topics of current interest.

Prerequisites, Math 771-772 or equivalent.

*Credit, 3 each semester.*

### 861 (I), 862 (II). ADVANCED GEOMETRY.

Advanced topics in geometry.

*Credit, 3 each semester.*



## UNIVERSITY OF MASSACHUSETTS

871 (I), 872 (II). **ADVANCED TOPOLOGY.**  
Advanced topics in topology. *Credit, 3 each semester.*

881 (I), 882 (II). **ADVANCED PURE AND/OR APPLIED MATHEMATICS.** *Credit, 3 each semester.*

883 (I), 884 (II). **DIRECTED READINGS.** *Credit, up to 6.*

889 (I), 890 (II). **PROBLEM SEMINAR.**  
Introduces beginning graduate students to the methods of mathematical research. *Credit, 1 each semester.*

891 (I), 892 (II). **PROSEMINAR.**  
Presentation by the beginning graduate student of material from the mathematics literature. *Credit, 1 each semester.*

893 (I), 894 (II). **LITERATURE SEMINAR.**  
Presentation by the intermediate graduate student of material from the mathematics literature. *Credit, 1 each semester.*

895 (I), 896 (II), 897 (III), 898 (IV). **RESEARCH SEMINAR.**  
Presentation by the advanced graduate student of research articles, perhaps his own research. *Credit, 1 each semester.*

900. **DOCTORAL DISSERTATION.** *Credit, 10.*

### Statistics Courses

701 (I), 702 (II). **STATISTICAL TEST AND DECISION PROCEDURES.**  
Statistical decision theory, theory of hypothesis testing, optimal tests, non-parametric procedures.  
Prerequisites, Stat 707; Math 611 and 625, or equivalent. *Credit, 3 each semester.*

705 (I), 706 (II). **PROBABILITY THEORY FOR STATISTICS.**  
Sample spaces, probability measures, combinatorics, random variables, distributions, independence, moment generating functions. Measures, expectations, convolutions, laws of large numbers, uniqueness, and Radon-Nikodym theorems.  
Prerequisite, Math 165 or equivalent.  
Prerequisite or corequisite, Math 625 or equivalent. *Credit, 3 each semester.*

707. **A FIRST COURSE IN MATHEMATICAL STATISTICS.**  
Distribution theory, maximum likelihood estimation, confidence intervals, sufficiency, point estimation, hypotheses testing, Bayesian inference, decision theory, nonparametric statistics, survey of special topics.  
Prerequisite, Stat 705.

725 (I), 726 (II). **ESTIMATION THEORY AND HYPOTHESIS TESTING.**  
Maximum likelihood, types of estimation, properties of estimators, 2 sample problem, k sample problem.  
Prerequisites or corequisites, Stat 562 and 582; Math 611 and 625, or equivalent. *Credit, 3 each semester.*

751. **RANDOM PROCESSES I.**  
Foundations of the theory of random processes; survey of various special processes and applications, e.g., Markov processes, random walks, queuing and renewal processes, Brownian motion, diffusion processes, stationary processes.  
Prerequisites, Math 723 or Stat 705, 706 or Stat 851 or permission of instructor.

752. **RANDOM PROCESSES II.**  
Topics of current interest in random processes, e.g. Markov processes, martingales, stationary processes, statistical analysis of time series, application of random processes.  
Prerequisite, Stat 751.

805 (I), 806 (II). **ADVANCED MATHEMATICAL STATISTICS.**  
Review 705, 706, 707. Characteristic functions, central limit

## MATHEMATICS AND STATISTICS

theorems, matrix algebra and multivariate analysis, bounds for the variance. Sufficiency, completeness, efficiency, maximum likelihood, least squares, tests, interval estimation, multiple comparisons.  
Prerequisites, Stat 706 and 707. *Credit, 3 each semester.*

841 (I), 842 (II). **RECENT DEVELOPMENTS IN STATISTICS.**  
Content varies with instructor. Possible topics include: inference in stochastic processes, decision processes, spectral analysis of stationary processes, geometry of moment spaces, sequential procedures, optimal stopping.  
Prerequisites, Stat 706 and 707, Math 611 and 625 or equivalent. *Credit, 3 each semester.*

851 (I), 852 (II). **ADVANCED PROBABILITY, I AND II.**  
Probability theory from a measure-theoretic viewpoint. The general theory of conditioning, martingale theory, Markov processes, general central limit problem. Advanced topics, e.g. potential theory, ergodic theory.

880. **SEMINAR.**  
Research papers by staff and students; invited lectures by prominent statisticians. *Credit, 1-3.*

**COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS**  
(For either major or minor credit)

### Mathematics Courses

533. **PROBABILITY.**  
A postulational study of probability, including counting methods, random variables; additional topics chosen from Bayes' Theorem, statistical independence, laws of large numbers, and Markov processes.  
Prerequisites, Math 165/166 or Math 174/184, and Math 167. In addition Math 500 and/or Math 511 are strongly recommended.

541. **APPLIED ANALYSIS I.**  
Complex analysis including analytic functions, residues, and conformal mappings; superposition of solutions of linear differential equations; orthogonal functions and Fourier series.  
Prerequisite, Math 174/184 or Math 165/166.

542. **APPLIED ANALYSIS II.**  
Continuation of Math 541. Properties of Fourier series; boundary value problems; orthogonal functions; Laplace and Fourier transforms; applications to physical and engineering sciences.  
Prerequisite, Math 541; differential equations and a year of physics are desirable.

545, 546. **APPLIED MATHEMATICS I AND II.**  
Topics from engineering and mathematical physics presented rigorously and with free use of abstract mathematical concepts and modern mathematical machinery.  
Prerequisites, Math 165, 166 and either Math 167 or Math 500. *Credit, 3 each semester.*

551. **NUMERICAL ANALYSIS I.**  
A first course in techniques of numerical approximation in analysis and algebra. Not for credit after Comp Sci 251.  
Prerequisites, Math 174/184 or 165/166, and Comp Sci 121 or 131 or knowledge of basic FORTRAN.

552. **NUMERICAL ANALYSIS II.**  
Continuation of Math 551, including numerical solution of partial differential equations.  
Prerequisite, Math 551.

571. **THEORY OF NUMBERS.**  
Euclidean algorithm, prime numbers, congruences, quadratic reciprocity, further topics in number theory. Recommended for prospective high school mathematics teachers.  
Prerequisite, Math 167 or Math 500, or permission of instructor.

## MATHEMATICS AND STATISTICS

## GRADUATE SCHOOL

### 611. THEORY OF GROUP REPRESENTATIONS.

Abstract groups, subgroups, quotient groups, homomorphisms, representations, irreducible representations, characters, orthogonality relations. Intended for students qualified to study algebra at a significantly higher level of abstraction than Math 511.  
Prerequisites, Math 167 and permission of the Department.

### 612. ADVANCED TOPICS IN ALGEBRA.

Topics chosen from: rings, integral domains, modules over principal ideal domains, field extensions, and Galois theory.  
Prerequisite, Math 611, or Math 511 and permission of instructor.

### 625. INTRODUCTORY MODERN ANALYSIS I.

Basic topology of Euclidean  $n$ -space and metric spaces, convergence of sequences and series, continuous functions and their local and global properties.  
Prerequisites, Math 174/184 or Math 165/166, and Math 167. Math 500 is strongly recommended.

### 626. INTRODUCTORY MODERN ANALYSIS II.

Continuation of Math 625. Differentiation, Riemann integration, sequences and series of functions, functions of several variables.  
Prerequisite, Math 625.

### 631. ORDINARY DIFFERENTIAL EQUATIONS.

First and second-order equations, existence and uniqueness theorems, systems of equations.  
Prerequisites, Math 174/184 or Math 165/166, and Math 167.

### 632. TOPICS IN ORDINARY DIFFERENTIAL EQUATIONS.

Topics to be chosen from: Sturm-Liouville Theory, series solutions, stability theory and singular points, numerical methods, transform methods.  
Prerequisite, Math 631.

### 634. INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS.

Classification of second-order partial differential equations, wave equation, Laplace's equation, heat equation, separation of variables.  
Prerequisites, Math 174/184 or Math 165/166, Math 167, and Math 631 or Math 643.

### 645. LINEAR ALGEBRA FOR APPLIED MATHEMATICS.

Introduction to vector spaces, inner products, and matrices, linear transformations, tensors, determinants, orientation, the spectral theorem for normal operators, complexification, real normal operators, and exterior algebra.  
Prerequisite, Math 167. Math 500 recommended but not required.

### 646. VECTOR AND TENSOR ANALYSIS WITH APPLICATIONS.

Continuation of Math 645. Frechet derivatives, the inverse and implicit function theorems, vector and tensor fields, exterior differentiation, differential forms, differentiable manifolds.  
Prerequisites, Math 645 and Math 165/166 or Math 174/184.

### 663. DIFFERENTIAL GEOMETRY.

Differential geometry of curves and surfaces in Euclidean 3-space using vector methods.  
Prerequisites, Math 174/184 or Math 165/166, and Math 167, or permission of instructor.

### 671. SET THEORY.

Basic properties of sets. Ordered sets. Complete ordered sets. Well-ordered sets. Cardinal and ordinal numbers. Axiom of choice, well-ordering theorem, and Zorn's lemma. Cardinal arithmetic.  
Prerequisite, Math 167 or permission of instructor.

## Statistics Courses

### 561. DESIGN OF EXPERIMENTS (METHODS).

Purpose of experimental designs and their basic assumptions; individual comparisons, components of error, confounding; applications from various fields.  
Prerequisite, Stat 121, 532, or 616.

### 562. ADVANCED STATISTICAL ANALYSIS OF EXPERIMENTAL DATA (II).

Analysis of data with disproportionate subclass numbers. Includes method of fitting constants, method of weighted squares of means, absorption of equations, expectations of mean squares, and tests of hypotheses.  
Prerequisite, Stat 561.

### 571. SURVEY SAMPLING.

Theory and practice of sampling, optimum allocation of resources, estimation of sample size, various sampling methods, ratio and regression estimates, problem of non-response.  
Prerequisite, Stat 121, 532, or 616.

### 572. SAMPLING THEORY AND METHODS.

Problems and methods of sampling, production and quality control, acceptance sampling, O.C. and A.S.N. curves, types and properties of estimators.  
Prerequisite, Stat 121, 532, or 616.

### 581. MULTIVARIATE ANALYSIS (METHODS).

Applications of the theory in Statistics 582 to actual problems; research studies by the students, critiques of published research, or analysis of other bodies of data.  
Prerequisite, Stat 551, or 616.

### 582. MULTIVARIATE ANALYSIS (THEORY).

Correlation and regression, principal components, canonical analysis, analysis of dispersion and covariance, tests of homogeneity, discriminant functions.  
Prerequisite, Stat 616.

### 615. INTRODUCTION TO THE THEORY OF STATISTICS I.

Probability, random variables, distributions (with emphasis on binomial and normal distributions), expectation, bivariate and multivariate distributions, sampling distributions, central limit theorem, point estimation, maximum likelihood estimators, interval estimation.  
Prerequisite, Math 124/125/134 or 117/119 or 132/136/138 or 154.

### 616. INTRODUCTION TO THE THEORY OF STATISTICS II.

Interval estimation, hypothesis testing, analysis of variance, regression, correlation, decision theory.  
Prerequisite, Stat 615.

## NOT FOR GRADUATE CREDIT IN MATHEMATICS AND STATISTICS

(These courses cannot be credited toward an advanced degree in mathematics and statistics.)

## Mathematics Courses

**500. FUNDAMENTAL CONCEPTS OF MATHEMATICS.** Non-axiomatic propositional calculus (with truth tables), basic quantification theory and set algebra. Binary relations, equivalence relations, partitions, functions. Development of the basic algebraic and topological features of real numbers.  
Prerequisite, permission of instructor.

### 511. INTRODUCTION TO MODERN ALGEBRA I.

Introduction to groups, rings, and fields.  
Prerequisite, Math 167. Math 500 may be helpful but is not necessary.

### 512. INTRODUCTION TO MODERN ALGEBRA II.

Continuation of Math 511. Algebraic field extensions and

## UNIVERSITY OF MASSACHUSETTS

solutions by radicals, canonical forms of matrices, quadratic forms, theory of groups, or other topics in algebra.  
Prerequisite, Math 511.

### 525. ADVANCED CALCULUS I.

Elementary topology of the line and Euclidean  $n$ -space, continuous functions, Riemann integration, infinite series and power series. Not for credit after Math 625.  
Prerequisite, Math 165/166 or Math 174/184 and Math 167. Math 500 may be very helpful but is not necessary.

### 526. ADVANCED CALCULUS II.

Continuation of Math 525. Multivariate analysis and the theorems of Green, Gauss, and Stokes. Not for credit after Math 626.  
Prerequisite, Math 525.

### 557. LINEAR PROGRAMMING AND THEORY OF GAMES.

The Simplex Method and extensions; duality theorems; transportation problems and other applications; finite two-person zero-sum games and the fundamental theorem.  
Prerequisite, Math 167 or permission of instructor.

### 561. AFFINE AND PROJECTIVE GEOMETRY I.

Coordination of the Desarguesian affine plane; the projective plane as an extension of the affine plane. Highly recommended for prospective secondary school mathematics teachers.  
Prerequisite, Math 167 or permission of instructor.

### 562. AFFINE AND PROJECTIVE GEOMETRY II.

Continuation of Math 561. Topics from affine, projective, Euclidean, and non-Euclidean geometry.  
Prerequisite, Math 561.

### 575. TOPICS IN HISTORY OF MATHEMATICS.

A detailed examination of the work of a single great mathematician, the mathematics of a single historical period, or the historical development of a single mathematical idea.  
Prerequisite, Math 174/184 or Math 165/166.

### 665. TOPOLOGY I.

Introduction to the topology of metric spaces and topological spaces; metrics, topologies, continuity, connectedness, compactness.  
Prerequisite, Math 525 or Math 625 or permission of instructor.

### 666. TOPOLOGY II.

Introduction to the geometric ideas behind algebraic topology. Polyhedra, manifolds, Jordan curve theorem, homology mod 2, classification of surfaces, Brouwer fixed-point theorem.  
Prerequisites, Math 511 or 611, and Math 665.

## Statistics Courses

### 531. INTRODUCTION TO FUNDAMENTALS OF STATISTICAL INFERENCE I.

Random experiments and probability models; independence; conditional probability; sampling, random variables; data representations; special distributions; deduction and inference.

### 532. INTRODUCTION TO FUNDAMENTALS OF STATISTICAL INFERENCE II

Point, interval, and model estimation, hypothesis testing; optimality concepts; power; least squares techniques; decision theoretic notions.  
Prerequisite, Stat 531.

### 551. ELEMENTARY LEAST SQUARES, REGRESSION, AND ANALYSIS OF VARIANCE.

Theory of least squares, analysis of variance, simple linear and multiple regression, and application of these techniques to the real data.  
Prerequisite, Stat 121 or 532.

## MECHANICAL ENGINEERING

# Mechanical Engineering

## GRADUATE FACULTY

EDWARD SUNDERLAND, *Professor and Head of the Department of Mechanical Engineering*, B.S.M.E., Massachusetts Institute of Technology, 1954, M.S.M.E., Purdue, 1956; Ph.D., 1958.

CORRADO R. POLI, *Professor and Graduate Program Director*, B.S., Rensselaer Polytechnic Institute, 1957; M.S., 1958; Ph.D., Ohio State, 1965.

LAWRENCE L. AMBS, *Assistant Professor*, B.S. University of Minnesota, 1960; M.S., 1962; Ph.D., 1967.

MAURICE E. BATES, *Professor*, B.S.E., Michigan, 1934; M.S., Massachusetts Institute of Technology, 1935; Ph.D., 1937.

GEOFFREY BOOTHROYD, *Professor*, B.S.E., University of London, 1957; Ph.D., 1962; D.Sc., 1974.

DUANE E. CROMACK, *Associate Professor*, B.S., Massachusetts, 1959; M.E., Yale, 1961; Eng.D., Rensselaer Polytechnic Institute, 1968.

F. ERSKINE CROSSLEY, *Professor*, B.A., Cambridge University, 1937; M.A., 1941; Eng.D., Yale University, 1949.

ROBERT W. DAY, *Professor*, B.S., Massachusetts, 1948; M.M.E., Rensselaer Polytechnic Institute, 1954.

JOHN H. DITTFACH, *Professor*, B.S.M.E., Minnesota, 1947; M.S.M.E., 1948.

JOHN R. DIXON, *Professor*, B.S., Massachusetts Institute of Technology, 1952; M.S., 1953; Ph.D., Carnegie Institute of Technology, 1961.

WILLIAM P. GOSS, *Associate Professor*, B.S., Connecticut, 1961; M.S., 1962; Ph.D., 1967.

KARL JAKUS, *Associate Professor*, B.M.E., Wisconsin, 1963; M.S., California at Berkeley, 1965; Ph.D., 1968.

ROBERT H. KIRCHHOFF, *Associate Professor*, B.M.E., University of Santa Clara, 1961; M.S., University of Arizona, 1963; Ph.D., California at Berkeley, 1969.

JON G. MCGOWAN, *Professor*, B.S., Carnegie Institute of Technology, 1961; M.S., Stanford, 1962; Ph.D., Carnegie Institute of Technology, 1965.

LAURENCE MURCH, *Assistant Professor*, B.S., Northeastern, 1965; M.S., Clarkson College of Technology, 1968; Ph.D., Massachusetts, 1972.

CARL W. NELSON, *Associate Professor of Metallurgy*, B.S., Case Institute of Technology, 1956; M.S., 1963; Ph.D., 1965.

JOSEPH M. O'BYRNE, *Associate Professor*, B.S.M.E., Cincinnati, 1950; M.E., 1952; M.S.M.E., Kentucky, 1952.

ROBERT K. PATTERSON, *Associate Professor*, B.S., Maine, 1948; M.S., 1955.

KENNETH G. PICHA, *Professor*, B.S., Georgia Institute of Technology, 1946, M.S., 1948, Ph.D., Minnesota, 1957.

JOHN E. RITTER, *Professor of Materials Engineering*, B.S., Massachusetts Institute of Technology, 1961, M.S., 1962, Ph.D., Cornell, 1966.

G. ALBERT RUSSELL, *Associate Professor*, B.S., Massachusetts Institute of Technology, 1958; M.S., Arizona State, 1961; Ph.D., Connecticut, 1967.



## MECHANICAL ENGINEERING

FRANKLIN UMHOLTZ, *Associate Professor*, B.A., California State, 1958; M.A., 1961.

WILLIAM R. D. WILSON, *Associate Professor*, B.S., Queens University of Belfast, 1963; Ph.D., 1967.

JOHN W. ZAHRADNIK, *Professor*, B.S., Pennsylvania State, 1950; M.S., Iowa State, 1951; Ph.D., Massachusetts Institute of Technology, 1965.

GEORGE E. ZINSMEISTER, *Associate Professor*, B.M.E., Rensselaer Polytechnic Institute, 1961; M.S., Purdue, 1963; Ph.D., 1965.

The Master of Science program in Mechanical Engineering is designed to meet the needs of students planning either doctoral study or professional employment. Thirty credit hours are required, 6 of which are to be earned by taking one course from any two of the following groups:

- Group A: MAE 702 Thermodynamics.  
MAE 722 Advanced Fluid Mechanics.
- Group B: MAE 730 Advanced Solid Mechanics.  
MAE 740 Advanced Dynamics.
- Group C: MAE 608 Physical Metallurgical Principles.
- Group C: MAE 780 Metal Forming Processes.

Six credits of Mathematics are required, and a thesis or project of from 6 to 9 credits is normally required. The remaining credits are electives for specialization in such area as heat transfer, fluid mechanics, thermodynamics, dynamics and vibrations, machine or system design, propulsion, aerodynamics, biological processing, and metallurgy or material processing. In addition, all students must satisfy the Graduate School's requirements for the Master's degree.

The Master of Science program in Manufacturing Engineering is available for those students who are more interested in the manufacturing aspects of Mechanical engineering.

The Doctor of Philosophy program in Mechanical Engineering imposes no minimum credit hours but each course program must include the following elements:

- a. Advanced and comprehensive study in the fundamentals of mechanical engineering including appropriate science courses in mathematics, physics, and chemistry;
- b. Intensive study of a special discipline within mechanical engineering (for example, heat transfer, mechanics, gas or fluid dynamics, design, etc.), including study of the current literature;
- c. Either intensive study of a second special discipline within mechanical engineering, including study of the current literature, or study in another discipline. The selection of this second discipline and the program of study is subject to approval by the student's Guidance Committee and by the Mechanical Engineering Graduate Committee but it is the intent of the option to allow and even encourage wide latitude in the selection of fields from engineering, science, social science, arts, or humanities.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

COURSES OPEN TO GRADUATE STUDENT ONLY  
(For either major or minor credit)

## GRADUATE SCHOOL

### 700. SPECIAL PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING.

Special investigation or research problems, the scope to be varied to meet specific conditions.  
Prerequisite, as required by the problem. *Credit, 1-6.*

### 701. ADVANCED THERMODYNAMICS.

Theory of advanced, direct and indirect, energy conversion systems. Thermodynamic cycle optimization methods. Irreversible thermodynamics as applied to steady state energy conversion systems. Direct energy conversion systems include MHD, fuel cells, thermoelectric, thermionic, and other current systems.  
Prerequisite, MAE 702 or equivalent. *Mr. McGowan.*

### 702. THERMODYNAMICS.

Review of classical thermodynamics and conventional energy conversion systems. Introduction to kinetic theory of gases, and statistical thermodynamics. Selected topics in chemical thermodynamics.  
Prerequisite, graduate standing or permission of instructor. *Mr. Amb, Mr. McGowan.*

### 703. ADVANCED MECHANICAL ENGINEERING ANALYSIS I.

Methods of analysis of mechanical engineering problems. Modular structure allows students to choose topics appropriate to their background and specific area of study. For current offerings contact the Mechanical and Aerospace Engineering Department Office.  
Prerequisite, graduate standing or permission of instructor.

### 704. ADVANCED MECHANICAL ENGINEERING ANALYSIS II.

Continuation of MAE 703.  
Prerequisite, MAE 703.

### 705. ADVANCED HEAT TRANSFER I — CONDUCTION.

Development of the general heat conduction equation for nonhomogeneous and anisotropic materials with temperature dependent properties. Formulation of boundary conditions in heat conduction problems. Solution of sample resulting boundary value problems using separation of variables, integral transform and finite difference techniques.  
Prerequisite, MAE 582 or equivalent. *Mr. Zinsmeister.*

### 706. ADVANCED HEAT TRANSFER II — CONVECTION.

Development of the general energy equation for convective heat transfer from basic concepts of energy and mass flow. Application to laminar and turbulent, internal and external convective heat transfer problems. Solution methods, including boundary layer theory, similarity concepts, integral approximation methods, and numerical techniques. Introduction to mass transfer.  
Prerequisite, MAE 722, or equivalent. *Mr. Goss, Mr. Jakus.*

### 707. VISCOUS FLUIDS.

Exact solutions to the Navier-Stokes equations, slow flow, and boundary layer flow. One-dimensional gas dynamics, shock waves, the acoustic equations, and application of the theory of characteristics to compressible flow.  
Prerequisite, MAE 722 or equivalent. *Mr. Jakus.*

### 709. MECHANICAL PROPERTIES OF MATERIALS.

Dislocation theory and its application to the mechanical properties of non-organic materials.  
Prerequisite, MAE 608 or equivalent. *Mr. Nelson, Mr. Ritter.*

### 713. ADVANCED PROPULSION SYSTEMS.

Design, control, and integration of propulsion systems with the vehicle. Air-breathing engines, chemical rocket motors, electrical and nuclear engines. Power and energy limited systems for various mission requirements.  
Prerequisite, MAE 578 or equivalent. *Mr. Amb.*

## UNIVERSITY OF MASSACHUSETTS

### 722. ADVANCED FLUID MECHANICS.

Fundamentals of fluid mechanics including kinematics, the stress tensor, and the basic equations from the conservation of mass, momentum, and energy. The dynamics of an inviscid fluid and vortex motion. MAE 722 and 707 form a one-year comprehensive course in fluid mechanics.

Prerequisite, MAE 265 or equivalent.

Mr. Jakus, Mr. Kirchhoff.

### 730. ADVANCED SOLID MECHANICS.

A unified treatment of the analysis of solids. Consideration of continuity, mechanical energy, stress and strain. Application to elasticity, thermoelasticity, and plasticity.

Prerequisite, graduate standing or permission of instructor.

### 740. ADVANCED DYNAMICS.

Advanced dynamics of particles, systems of particles, variable mass systems, and rigid bodies. Gyroscopic motion. Rotating and accelerating frames of reference. Use of energy methods, LaGrange's equations. Hamilton's principle, and Eulerian angles in engineering problems.

Prerequisite, graduate standing or permission of instructor.

Mr. Poli.

### 741. VIBRATIONS II.

Vibration of discrete systems with many degrees of freedom, normal modes and frequencies, approximate methods. Introduction to nonlinear vibrations. Nonlinearities in inertia, damping, restoring forces, etc. Singular points and stability, including approximate methods of solution. Liapunov's method.

Prerequisite, MAE 740.

Mr. Poli.

### 743. STABILITY OF STRUCTURES.

Correlations of various linear and nonlinear theories with experiments. Creep buckling. Thermal buckling. Buckling due to dynamic loads. Buckling of non-conservative systems.

Prerequisite, graduate standing.

### 744. THERMAL EFFECTS IN STRUCTURES.

Uncoupled thermoelastic theory, thermal stresses in beams, rings, plates, and shells. Thermally induced vibrations of beams, plates, and shells. Inelastic thermal stress problems. Stresses in the presence of creep. Ablation phenomena.

Prerequisite, graduate standing.

### 746. ADVANCED VIBRATIONS.

Free and forced vibrations of strings, rods, bars, and thin elastic plates. Free vibrations of circular, cylindrical, and conical shells. Forced harmonic vibrations of thin shells. Propagation of elastic waves. Rayleigh surface waves. Statistical concepts of random vibration analysis.

Prerequisite, MAE 740.

Mr. Poli.

### 750. MECHANISMS AND THEORY OF MACHINES I.

Structure and type synthesis of mechanisms; a solution to the designer's problem of selecting the type of mechanism for a job; applications of the theory of graphs. Digital computer methods for design of linkages; optimization of nonlinear systems. Geometry of plane curves, and instantaneous kinematics of a plane moving body.

(Open to qualified undergraduates with permission of instructor.)

Mr. Crossley.

### 751. MECHANISMS AND THEORY OF MACHINES II.

Dynamics of cam drives; design by computer or simulation by analog computer. Gear train design; problems of efficiency and circulation power in loops. Analog computer simulation of two- and three-dimensional mechanisms in motion. Some three-dimensional linkages and design methods.

Mr. Crossley.

### 760. ADVANCED MECHANICAL ENGINEERING DESIGN I.

Application of control systems theory to design of thermal, fluid, mechanical, electromechanical, and combined systems. Consideration of optimization, stability and methods of simulation.

Credit, 4.

## MECHANICAL ENGINEERING

### 761. ADVANCED MECHANICAL ENGINEERING DESIGN II.

Optimization in design. Methods of optimization; numerical and variational, linear and non-linear. Advantages, disadvantages, restrictions and use of the various methods.

### 770. ADVANCED COMBUSTION.

Topics in chemically reacting flow systems, heat, mass, and momentum transfer in chemically reacting ducted flows. Topics include chemical equilibrium, chemical kinetics, transport properties, laminar and turbulent flows, droplets and sprays.

Prerequisite, graduate standing and permission of instructor.

Mr. Ambs.

### 780. METAL FORMING PROCESSES.

The theory of plasticity including yield criteria and flow laws. Upper and lower bound methods and their application to the analysis of selected metal forming processes. Practical problems encountered in metal forming.

Prerequisite, MAE 520.

Mr. Boothroyd, Mr. Wilson.

### 790. ENGINEERING PROJECT.

A research, design, or development project. Written preparation and oral defense of a project proposal giving objectives, literature survey, and proposed plan. Written preparation and oral defense of a final report giving results and conclusions. May be repeated for credit.

Prerequisite, graduate standing.

Credit, 1-10.

### 799. LITERATURE SURVEY AND SEMINAR.

A comprehensive study and organization of the current literature on a selected topic. Presentation of the survey in an open seminar including Department faculty and graduate students. Open only to students who have passed Preliminary Examinations.

Not for credit.

## Selected Topics Courses

To best serve the varied interests of its graduate students, the Department has available the following set of selected topics courses. These are one-semester courses and not individualized reading courses. The particular choice of subject matter to be covered in any one of these courses depends upon the specialized needs and interests of the students and is tailored to their requests. The courses are offered only on sufficient demand.

### 801. SELECTED TOPICS IN THERMODYNAMICS.

Current topics in thermodynamics. An in-depth investigation of a specific topic or specialized thermodynamic system. Emphasis on concurrent reading of the literature.

Prerequisite, MAE 701.

Mr. Ambs, Mr. McGowan.

### 811. SELECTED TOPICS IN HEAT TRANSFER.

Topics may be chosen from the following: nonlinear problems in heat conduction with emphasis on temperature-dependent properties; heat conduction in composite and anisotropic materials; heat transfer with change of phase (boiling, condensation, sublimation, melting, and freezing); finite difference and integral approximation techniques in heat transfer; introduction to radiation heat transfer including combined radiation-conduction and radiation-convection.

Prerequisites, MAE 705 and/or MAE 706.

Mr. Goss, Mr. Zinsmeister.

### 821. SELECTED TOPICS IN FLUID MECHANICS.

Any one or two of the following topics: numerical methods in fluid mechanics; advanced measurement techniques; advanced compressible flow; singular perturbation theory; magnetohydrodynamics; free molecule flow-kinetic theory.

Prerequisite, MAE 707.

Mr. Kirchhoff.

### 831. SELECTED TOPICS IN SOLID MECHANICS.

Topics normally chosen from such areas as stability of structures, thermal effects in structures, inelastic behavior of materials, and shell theory.

Prerequisite, MAE 730.

Mr. Poli.



## MECHANICAL ENGINEERING

### 841. SELECTED TOPICS IN VIBRATIONS.

A more in-depth study of some of the topics covered in 741 and 746; usually topics in the area of nonlinear vibrations, stability theory, or random vibrations.  
Prerequisites, MAE 741 and/or MAE 746. Mr. Poli.

### 851. SELECTED TOPICS ON MECHANISMS AND MACHINE DESIGN.

A few of the following may be studied as a continuation of MAE 751: Classical Burmester theory. The geometry of screw systems, line complexes, and their relation to the mobility of linkages. Use of dual numbers, quaternions, and dual matrices in the computer solution of spatial mechanism design problems. Application of Chebyshev approximation methods in design. Dynamic analysis and balancing of linkages. Dynamics of mechanical systems with play, backlash, or separation of the parts as in cams, with either analog or computer simulation. Dynamics of mechanisms containing springs of highly elastic elements; nonlinear vibratory systems; stability according to Mathieu-Hill; systems with different regimes of behavior.  
Prerequisite, MAE 751. Mr. Crossley.

### 871. SPECIAL TOPICS IN COMBUSTION AND PROPULSION.

Special topics according to student and instructor interest selected from the current literature. An in-depth student investigation of some aspect of the problem.  
Prerequisites, MAE 713 and/or MAE 770. Mr. Ambs.

### 881. SELECTED TOPICS IN MATERIALS.

Advanced study in topics of current interest. Examples include thermodynamics of phase transfer motions, mechanical behavior of ceramic materials, composite materials, and relaxation phenomena in metals.  
Prerequisite, MAE 709. Mr. Nelson, Mr. Ritter.

### 800. MASTER'S THESIS.

Credit, 3-10.

### 900. DOCTORAL DISSERTATION.

Credit, 18.

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

#### 520. MACHINING AND MACHINE TOOLS.

Fundamentals of metal cutting including temperatures generated and dynamic stability of the cutting process. Lubrication and wear of cutting tools and cutting conditions for maximum production or minimum cost. Design of machine tools. Numerical control and economics of machine tools.  
Mr. Boothroyd.

#### 521. AUTOMATION IN MANUFACTURING.

In-depth study of the automatic assembly process including feeding and orienting of parts and the performance and economics of assembly systems. Design of parts and products for automatic assembly.  
Mr. Boothroyd.

#### 535. MANUFACTURING PROCESSES.

Introduction to casting, forming, cutting, and joining processes for metals and plastics. Includes the economics, relative advantages and limitations of the processes.  
Mr. Wilson.

#### 537. MANUFACTURING PROCESSES LABORATORY.

Experiments, workshops and short experimental projects based on the topics covered in MAE 535. Emphasis on experimental technique and presentation of results. One 3-hour laboratory period.  
Credit 1. Mr. Wilson.

#### 548. STRUCTURES FOR MECHANICAL AND AEROSPACE ENGINEERS I.

Introduction to the load and temperature environment of structures. Review of stress and strain with an introduction to the theory of elasticity. Theories of bending, extension, torsion and shear of slender beams without structural discontinuities. Introduction to work-energy principles and their application to the deflection and stress analysis of complex

structures. Examples from the fields of mechanical and aerospace engineering.

Prerequisite, MAE 145.

Mr. Poli.

#### 549. STRUCTURES FOR MECHANICAL AND AEROSPACE ENGINEERS II.

Continuation of MAE 548. Elastic instability. Applications to axially symmetrical problems, curved beams and stress concentrations. Applications to plates and shells. Introduction to problems involving viscous and plastic behavior. Numerical methods.

Prerequisites, MAE 548 or permission of instructor.

Mr. Poli.

#### 554. PRODUCT DESIGN I.

Human values in design. Central philosophy of product design. Emphasis on the relation between technical and human values, creativity, and design methodology. Laboratory includes the development of simple product concepts visualized in rapidly developed three-dimensional mockups. Two class hours, two 2-hour laboratory periods.

Mr. Umholtz.

#### 555. AQUACULTURAL ENGINEERING SYSTEMS (OE 591).

Rate theory and similitude in the scaling of biological processes. Case study of biological data used in the derivation of useful engineering system design relationships for the culture of mollusks. A bioengineering comparison of several systems used in aquaculture.

Mr. Zahradnik.

#### 557. PRODUCT DESIGN II.

Continuation of MAE 554. Integration of knowledge, methodology, and skills obtained in previous work applied and extended to product design. Semester-long design project with formal presentation to professional jury.

Prerequisite, MAE 554.

Two class hours, two 2-hour laboratory periods.

Mr. Umholtz.

#### 574. PERFORMANCE OF FLIGHT VEHICLES.

Aircraft performance, static and maneuvering. Fundamental astronautics, two-body, problem transfer orbits, rendezvous, intercept, lunar and interplanetary trajectories.

Prerequisites, MAE 246, 265. Mr. Cromack, Mr. Poli.

#### 576. COMBUSTION.

Phenomenological study of combustion processes in flowing systems.

Prerequisite, MAE 264.

Mr. Ambs.

#### 577. INTERNAL COMBUSTION ENGINES.

The thermodynamic and performance aspects of reciprocating gasoline and Diesel engines, steady flow gas turbines and turbo-jet engines, and rockets are major topics.

Prerequisite, MAE 264.

Mr. Ambs, Mr. Dittfach.

#### 578. AEROSPACE PROPULSION.

Primary and auxiliary power sources. Matching of air-breathing and rocket motors with vehicle. Electrical and nuclear propulsion systems.

Prerequisite, MAE 287.

Mr. Ambs.

#### 582. HEAT TRANSFER.

Fundamental principles of heat transfer by conduction, radiation, and convection. Methods of evaluating heat transfer rates and predicting operating temperatures.

Prerequisites, MAE 264 and Math 186 or 541.

Mr. O'Byrne, Mr. Zinsmeister.

#### 583. MACHINE DESIGN.

Principles of the design of various machine parts; economy of manufacture, safety, styling, invention and creativity. Two class hours, one 3-hour laboratory period.

Prerequisites, MAE 293, 235, and 237.

Mr. Bates, Mr. Crossley.

#### 585. VIBRATIONS I.

The linear vibrations of machines and machine structures.



## UNIVERSITY OF MASSACHUSETTS

Uses of active and passive isolation, balancing, absorption, damping and feedback control to reduce the effects of vibrations.

Prerequisite, MAE 246.

Mr. Poli.

### 586. ADVANCED MACHINE DESIGN.

Continuation of MAE 563. Additional elementary parts are analyzed, and some complete machines are studied. Considerable emphasis on invention and creativity.

Two class hours, one 3-hour laboratory period.

Prerequisite, MAE 583.

Mr. Bates, Mr. Crossley.

### 587. GAS DYNAMICS.

Continuation of MAE 265. Continuous and discrete media. Compressible flow equations and compressibility effects. Flow in variable area ducts, normal and oblique shocks. Two dimensional flow. Applications.

Prerequisites, MAE 265 and MAE 263.

Mr. Day, Mr. Kirchhoff.

### 591. MECHANICAL AND AERO-SPACE ENGINEERING ANALYSIS II.

Continuation of MAE 284 with emphasis on more complex problems and more advanced mathematical methods.

Two class hours, one 3-hour laboratory period.

Prerequisite, MAE 284.

Mr. Zinsmeister.

### 594. MECHANICAL AND AERO-SPACE SYSTEMS ANALYSIS.

Application of engineering analysis techniques to large-scale systems. Concepts and methodology of systems engineering.

Prerequisite, EE 142 or permission of instructor.

Mr. Russell.

### 595. MECHANICAL AND AERO-SPACE ENGINEERING DESIGN.

Application of fundamentals of technology to complex design projects.

One class hour, two 3-hour laboratory periods.

Mr. Dixon, Mr. Tartaglia.

### 597. LUBRICATION, FRICTION, AND WEAR.

Hydrodynamic and boundary lubrication, adhesive, abrasive and hysteretic friction and wear processes. Applications in the design of bearings, seals, gears and other systems involving surfaces in relative motion.

Prerequisite, graduate standing or permission of instructor.

### 608. PHYSICAL METALLURGICAL PRINCIPLES.

Principles underlying the structure and behavior of metals. Equilibrium and non-equilibrium phase relations in one- and two-component systems. Kinetics of diffusion and nucleation. Phase transformations, heat treatment, and hardenability.

Prerequisite, graduate standing or permission of instructor.

Mr. Nelson, Mr. Ritter.

### 615. AERODYNAMICS.

Application of theoretical fluid mechanics to aerodynamics including topics of theory of lift; finite wing theory; the effects of compressibility and viscosity on lift and drag; slender body theory.

Prerequisite, MAE 265 or equivalent.

Mr. Cromack.

### 616. STABILITY AND CONTROL OF VEHICLES.

Introduction to the general concepts of stability of motion. The stability of air, space, and ground vehicles.

Prerequisite, MAE 574 or permission of instructor.

Mr. Cromack, Mr. Poli.

### 650. X-RAY DIFFRACTION.

Principles of crystallography. X-ray diffraction.

Prerequisite, MAE 608.

Mr. Nelson, Mr. Ritter.

## Microbiology

### GRADUATE FACULTY

ROBERT P. MORTLOCK, *Professor and Head of the Department of Microbiology*, B.S., Rensselaer Polytechnic Institute, 1953; Ph.D., Illinois, 1958.

## MICROBIOLOGY

ERCOLE CANALE-PAROLA, *Professor and Graduate Program Director*, B.S., Illinois, 1956; M.S., 1957; Ph.D., 1961.

CHARLES D. COX, *Professor*, B.S., Illinois, 1940; M.S., 1941; Ph.D., 1947.

CLIFTON E. DOWELL, JR., *Associate Professor*, B.A., Texas Christian, 1955; M.A., 1957; Ph.D., University of Texas, 1962.

STANLEY C. HOLT, *Professor*, B.S., New York University, 1958; M.S., Michigan State, 1960; Ph.D., California at Davis, 1964.

THOMAS G. LESSIE, *Associate Professor*, B.S., Queens College, 1958; M.A., Harvard, 1961; Ph.D., 1963.

LEONARD C. NORKIN, *Assistant Professor*, B.S., Rensselaer Polytechnic Institute, 1964; Ph.D., Columbia, 1969.

ALBEY M. REINER, *Associate Professor*, B.S., Princeton, 1952; M.S., Wisconsin, 1964; Ph.D., Harvard, 1965.

CURTIS B. THORNE, *Professor*, B.S., West Virginia Wesleyan, 1943; M.S., Wisconsin, 1944; Ph.D., 1948.

MARTIN S. WILDER, *Associate Professor*, B.S., Brooklyn College, 1960; M.S., University of Kansas, 1963; Ph.D., 1966.

The Department of Microbiology provides facilities for students intending to complete the requirements for the Master of Science and Doctor of Philosophy degrees. Students accepted for graduate study are expected to have met the usual requirements for the bachelor's degree. Those students considered by the Department to be deficient in cognate sciences may be accepted as graduate student majors in microbiology and have their deficiencies removed during graduate study. Extensive advanced undergraduate courses in microbiology are not as essential as undergraduate background in chemistry, biological sciences, mathematics and physics, in preparation for graduate work in microbiology. Satisfactory knowledge of microbiology and cognate sciences is required for admission to advanced courses in microbiology. The department requires no foreign-language reading competency for the doctorate.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

#### 700. RESEARCH.

Not for thesis credit. May be repeated for a total of no more than 9 credits for a master's degree or 18 credits for a doctor's degree. Permission of instructor required.

*Credit, 2-6 each semester.*

#### 710. ADVANCED IMMUNOLOGY.

Advanced theories and laboratory procedures basic to immunology and serology. Permission of instructor required.

*Credit, 3-6. Mr. Cox.*

#### 720. ANIMAL VIROLOGY.

The molecular biology of animal viruses and viral genetic systems. Special consideration of poliovirus, influenza, and the DNA and RNA tumor viruses. Permission of instructor required.

*Mr. Norkin.*

#### 730. MICROBIAL FERMENTATIONS.

Microbial products. Theories and methods of industrial pro-

## MUSIC

duction. Laboratory experiments deal with microorganisms and procedures used in industry. Permission of instructor required.

### 740. ADVANCED MICROBIAL PHYSIOLOGY.

Laboratory. Growth of bacteria; macro-molecular composition, bacterial respiration and electron transport systems; fractionation and characterization of bacterial enzymes. Emphasis on regulation of their formation and activity. Permission of instructor required.

*Credit, 2-5. Mr. Lessie, Mr. Mortlock.*

### 750. MICROBIAL CYTOLOGY.

Lectures, literature reviews, and laboratory; a comprehensive survey of the structure of microbial cells and the functions of their components; use of the electron microscope and ancillary equipment. Permission of instructor required.

*Credit, 3-5. Mr. Holt.*

### 760. MICROBIAL METABOLISM.

Metabolic pathways and mechanisms in microorganisms. Lectures, readings and discussions. Permission of instructor required.

*Mr. Mortlock.*

### 770. MICROBIAL GENETICS.

Inheritance and variation in microorganisms. Mechanisms of recombination, transformation, transduction, and other genetic phenomena in microorganisms. Emphasis on molecular basis. Permission of instructor required.

*Credit, 4. Mr. Thorne.*

### 780. HOST-PARASITE RELATIONSHIPS.

Intensive treatment of specific relationships between parasitic microorganisms and their hosts, by appropriate literature and laboratory studies. Permission of instructor required.

*Credit, 2-5. Mr. Wilder.*

### 790. SEMINAR.

Reports and discussion of pertinent literature and research. Normally required of all graduate majors each semester in residence. Permission of instructor required.

*Credit, 1.*

### 800. MASTER'S THESIS.

*Credit, 10.*

### 890. CURRENT TOPICS.

Intensive consideration of a specific microbiological topic of current interest utilizing staff and student participation and visiting scientists. Lectures and discussions only. Credit depends upon particular topic. Permission of instructor required.

*Credit, 1-2.*

### 900. DOCTORAL DISSERTATION.

*Credit, 18.*

## COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

(For either major or minor credit)

### 550. GENERAL MICROBIOLOGY.

Cytology, pathogenic bacteriology, immunology and virology.

Two class hours, one three-hour laboratory period. Prerequisites, one semester of biological science and completion of, or concurrent registration in, a course in organic chemistry.

### 551. GENERAL MICROBIOLOGY.

Ecology, physiology, and genetics of microorganisms.

Two class hours, one three-hour laboratory period. Prerequisites, a college course in a biological science and completion of, or concurrent registration in, a course in organic chemistry.

### 580. PATHOGENIC BACTERIOLOGY.

Principles of host-parasite interactions; microbial virulence; pathogenic mechanisms; innate and acquired immunity to infectious disease.

Prerequisite, Microbiol 550.

*Credit, 4. Mr. Wilder.*

## GRADUATE SCHOOL

### 610. IMMUNOLOGY.

The nature of antigens and antibodies, their interactions and significance in resistance and hypersensitivity.

Two class hours, two 3-hour laboratory periods.

Prerequisite, Microbiol 550, or permission of instructor.

*Credit, 4. Mr. Cox.*

### 620. VIROLOGY.

The structure, and the chemical, physical, and biological properties of bacterial viruses.

Two class hours, two 3-hour laboratory periods.

Prerequisites, Microbiol 550 and permission of instructor.

*Credit, 4. Mr. Dowell.*

### 640. MICROBIAL PHYSIOLOGY.

Microbial chemistry and growth. Composition of bacterial cells, energy metabolism, biosynthesis of macro-molecules and macromolecule precursor materials, and regulatory mechanisms governing these events. Permission of instructor required.

*Mr. Mortlock, Mr. Lessie.*

### 660. MICROBIAL DIVERSITY.

Physiology, ecology, and morphology of selected groups of microorganisms. Behavior of bacteria in response to environmental stimuli.

Two class hours, two three-hour laboratory periods.

Prerequisite, Microbiol 551 or permission of instructor.

*Credit, 4. Mr. Canale-Parola.*

## Music

### GRADUATE FACULTY

ROBERT V. SUTTON, *Professor and Head of the Department of Music*, B.M., University of Alabama, 1948; M.M., Eastman School of Music, 1949; Ph.D., 1955.

ALBERT G. HUTTEMAN, *Associate Professor and Graduate Program Director*, B.M., New England Conservatory of Music, 1956; M.F.A., Ohio, 1957; Ph.D., Iowa, 1968.

HORACE C. BOYER, *Assistant Professor*, B.A., Bethune-Cookman College, 1957; M.A., Eastman School of Music, 1964; Ph.D., 1973.

NIGEL COXE, *Associate Professor*, L.R.A.M., Royal Academy of Music, London, 1950; F.R.A.M., 1964.

RICHARD DU BOIS, *Professor*, B.Mus., Heidelberg College, 1948; M.M., American Conservatory of Music, 1949; Ph.D., University of Iowa, 1964.

WILLIAM D. GAVER, *Assistant Professor*, B.M., Eastman School of Music, 1954; M.M., University of Houston, 1958; D.M.A., Missouri at Kansas City, 1971.

ROBERT STERN, *Professor*, B.A., Rochester, 1955; M.A., Eastman School of Music, 1956; Ph.D., 1962.

PETER H. TANNER, *Associate Professor*, B.M., Eastman School of Music, 1958; M.M., 1959; Ph.D., The Catholic University of America, 1967.

FREDERICK C. TILLIS, *Professor*, B.A., Wiley College, 1949; M.A., University of Iowa, 1952; Ph.D., 1963.

MIRIAM WHAPLES, *Associate Professor*, B.A., Indiana University, 1950; M.M., 1954; Ph.D., 1958.

A minimum of 33 hours and a comprehensive oral examination are required for the Master of Music degree. A basic core of courses in music theory and history and ensemble work is required of all degree candi-

UNIVERSITY OF MASSACHUSETTS

MUSIC

dates. The further hours are required of all degree candidates. The further hours are required according to the area of concentration, as advised, and electives are usually possible.

Areas of concentration are: Performance; Music Education; Music-History & Musicology; Theory-Composition. Candidates for the M.M. in Composition must submit, in lieu of a thesis, one original composition in large form (chamber music, orchestral, choral with instruments, or the like).

For admission in any area of concentration an audition in person (or by tape) is required in the applicant's major performance subject (instrument or voice). In Theory-Composition, scores of recent works are additionally required. On graduate registration day and on the day preceding it, Placement Tests are held in music theory, history and piano proficiency. Applicants should write immediately and separately to the Music Department for the M.M. leaflet, and name their performance subject and any alternative concentration. A double concentration is also usually possible with six or more additional hours.

ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

COURSES OPEN TO GRADUATE STUDENTS ONLY

700. SPECIAL PROBLEMS. *Credit, 1-6.*

701, 702. SEMINAR IN MUSICOLOGY.  
Materials and methods of systematic and historical musicology. Specialized topics investigated each semester. The application to different problems of various subjects such as history, acoustics, aesthetics, analysis. May be repeated for credit with varying content as advised. *Mr. King.*

710. COUNTERPOINT (CANON AND FUGUE).  
Writing and analysis of invertible counterpoint, various canonic devices, and fugue. *Mr. Beranson, Mr. Fussell.*

711, 712. COMPOSITION  
Free composition in various forms and media. Individual lessons. Weekly seminar. *Mr. Beranson.*

713-716. ANALYSIS OF MUSIC LITERATURE.  
Representative compositions from each period. Analysis by score and sound of the various musical forms and media.

713. ANALYSIS OF MUSIC LITERATURE, 1600-1750.

714. ANALYSIS OF MUSIC LITERATURE, 1750-1825.

715. ANALYSIS OF MUSIC LITERATURE, 1825-1900.

716. ANALYSIS OF MUSIC LITERATURE, 1890-PRESENT.

717. HISTORY AND PEDAGOGY OF THEORY.  
Principal authors of treatises dealing with composition, counterpoint, and harmony. Emphasis on the relationship between the works discussed and contemporary pedagogical techniques of presenting theory and allied subjects.

721-738. PERFORMANCE—INDIVIDUAL INSTRUCTION.  
Literature and instrumental technique or voice production. Audition required. *Credit, 1-3.*

721. APPLIED PIANO.  
*Mr. Cox.*

723. APPLIED VOICE

724. APPLIED VIOLIN.

725. APPLIED VIOLA.

726. APPLIED CELLO.

728. APPLIED FLUTE.

729. APPLIED OBOE.

730. APPLIED CLARINET

731. APPLIED BASSOON.

732. APPLIED SAXOPHONE

733. APPLIED TRUMPET

734. APPLIED FRENCH HORN

735. APPLIED TROMBONE.

736. APPLIED BARITONE HORN.

737. APPLIED TUBA

738. APPLIED PERCUSSION. *Mr. Tanner.*

742. RESEARCH IN MUSIC EDUCATION  
Individual research projects in selected areas of Music Education. *Mr. duBois.*

751. MUSIC EDUCATION IN THE ELEMENTARY SCHOOL.  
Exploration and evaluation of recent trends in elementary school music. Curriculum planning, materials, techniques. *Mr. Gaver.*

753. CHORAL MUSIC IN THE PUBLIC SCHOOL.  
Organization of the choral program in the junior and senior high school. Materials and methods of teaching small and large vocal ensembles. *Mr. duBois.*

800. MASTER'S THESIS. *Credit, 3-10.*

812. MUSIC HISTORY — MEDIEVAL.  
Repertoire study and stylistic analysis; study of notation. *Mrs. Whaples.*

813. MUSIC HISTORY — RENAISSANCE.  
Such composers as Dunstable, Dufay, Binchois, Okeghem, Obrecht, Isaac, Josquin, Milan, Tallis, Palestrina, Lassus, Victoria, Byrd, the Gabrielis, and their contemporaries. Media, forms, society. Reading, listening, score-study, analysis. *Mr. King.*

814. MUSIC HISTORY — BAROQUE.  
Such composers as the Camerata, Monteverdi, Schutz, Lully, Purcell, Corelli, Couperin, Rameau, the Scarlattis, and their contemporaries. Reading, listening, score study, analysis. *Mr. King.*

815. MUSIC HISTORY — THE AGE OF BACH AND HANDEL.  
J.S. Bach, the Bach family, Handel, their predecessors and contemporaries. Media, forms, society. Reading, listening, score study, analysis. *Mr. King.*

COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

014. REMEDIAL THEORY  
For students deficient in undergraduate theory. Materials adapted to individual requirements. *Credit, 0.*

509. MUSIC HISTORY — MUSIC OF THE 20TH CENTURY.  
Music, European and American, written since 1900. Includes



## NURSING

Stravinsky, Bartok, Hindemith, Copland, jazz, and electronic music. Mr. Tillis.

### 515. COUNTERPOINT.

Techniques of counterpoint, and analysis of polyphonic music of the 16th century. Composition in small forms, utilizing contrapuntal techniques. Mr. Stern.

### 516. ORCHESTRATION.

Problems in scoring for various ensembles including full orchestra. Mr. Stern.

### 517. CONTEMPORARY TECHNIQUES.

Melody, rhythm, harmony, and form in 20th-century music. Analysis, listening, written assignments. Credit, 2. Mr. Stern.

### 519, 520. JAZZ THEORY AND IMPROVISATION I AND II.

Theory as applied to performing, analyzing and composing in the jazz medium. Mr. Tillis.

### 526. ADVANCED CHORAL LITERATURE AND TECHNIQUES.

Historical survey of choral literature and the study of performance practices.

### 527. ADVANCED ORCHESTRAL LITERATURE AND TECHNIQUES.

Historical survey of orchestral literature and the study of performance practices.

### 601. MUSIC HISTORY — HAYDN, MOZART, AND BEETHOVEN.

Reading, listening, score study. Music of Haydn, Mozart and Beethoven, and possibly that of their contemporaries. Mr. King.

### 602. MUSIC HISTORY — FROM SCHUBERT TO DEBUSSY.

Historical study of 19th-century music in small and large forms, and various media including keyboard instruments. Lieder, chamber music, symphony, opera. Reading, listening, score study. Mr. King.

### 603. MUSIC HISTORY — HISTORY OF OPERA.

History of opera from the late 16th through the present century. Mr. King.

### 618. JAZZ ARRANGING AND COMPOSITION.

Writing arrangements and composing for jazz ensembles and the school stage band. Analysis, listening and instrumental scoring. Mr. Tillis.

### 664. ADVANCED INSTRUMENTAL CONDUCTING.

Score analysis, rehearsal techniques, and advanced conducting problems of orchestral ensembles.

### 665. ADVANCED CHORAL CONDUCTING.

Score analysis, rehearsal techniques, and advanced conducting problems of choral ensembles. Mr. duBois.

## Performing Organizations

### 761. UNIVERSITY CHORALE.

Advanced choir, selected by audition. Preparation and performance of choral literature ranging from the Renaissance to contemporary music. Performance on campus and on concert tours. Three or four rehearsals a week. Chamber Singers selected from this group. Credit, 1. Mr. duBois.

### 762. UNIVERSITY CHORUS.

Open to all. Preparation and concert performance of oratorios and other large choral works. Credit, 1.

### 765. WOMEN'S CHOIR.

A select choir specializing in literature for women's voices. Audition required. Credit, 1.

## GRADUATE SCHOOL

### 767. CHAMBER SINGERS.

Vocal ensembles specializing in performance of chamber music from Renaissance to contemporary. Audition required. Credit, 1. Mr. duBois.

### 768. MADRIGAL SINGERS.

Vocal ensemble specializing in music of the Renaissance. Audition required. Credit, 1.

### 771. UNIVERSITY ORCHESTRA.

Preparation and performance of orchestral literature of various styles and periods. Credit, 1.

### 781. MARCHING BAND.

Preparation and performance of pre-game and half-time shows during the football season. May be taken one semester with a semester of Music 782 or 783, or for two semesters. Credit, 1.

### 782. SYMPHONY BAND.

Preparation and performance of band and wind ensemble literature of various styles and periods. May be taken one semester with a semester of Music 781 or 783, or for two semesters. Credit, 1.

### 783. CONCERT BAND.

Preparation and limited performance of selected band literature. May be taken one semester with a semester of Music 781, or 782, or for two semesters. Credit, 1.

### 787. ENSEMBLE.

Preparation and performance of appropriate literature for small instrumental and vocal ensembles. Credit, 1.

### 788. JAZZ WORKSHOP.

Preparation and performance of literature for jazz ensembles and the school stage band. Mr. Tillis.

## Nursing

## GRADUATE FACULTY

IRA D. TRAIL, *Professor and Director of the Division of Nursing*, R.N., Bellevue Hospital, 1947; B.S., Hunter College, 1950; M.A., Columbia, 1960; Dr. P.H., California at Los Angeles, 1971.

GLADYS ANCRUM, *Associate Professor and Chairman of the Graduate Program in Community Health Nursing*, B.S., Columbia, 1954; M.A., 1958; M.P.H., California at Los Angeles, 1965; D.P.H., 1968.

ANNA H. GALLAGHER, *Professor of Nursing and Professor of Curriculum Development*, R.N., Philadelphia General Hospital, 1939; B.S., University of Pennsylvania, 1950; M.S., 1951; Ed.D., 1956.

ELAINE L. LAMONICA, *Assistant Professor*, B.S., Columbia Union, 1964; M.S., Florida, 1974; Ed.D., Massachusetts, 1975.

GWEN MARRAM, *Professor and Chairman of Graduate Program in Mental Health Nursing*, B.S., California at San Francisco, 1965; M.S., 1966; Ph.D., Stanford, 1972.

ALVIN E. WINDER, *Professor*, B.A. Brooklyn College, 1947; M.S., University of Illinois, 1948; Ph.D., University of Chicago, 1952.

## UNIVERSITY OF MASSACHUSETTS

## NURSING

The program has been developed in consideration of four broad areas: first, the need for clinical specialization to follow the general preparation in baccalaureate education; second, the changing needs of society in regard to nursing which are intimately related to the rapid advances in health practice based upon the explosion of knowledge in the sciences; third, the imperative need for the development of theoretical content for the profession of nursing based upon research and other scholarly pursuits; and, fourth, the need for the development of leadership personnel who have new knowledge, new insights and concepts, and who are prepared to cope with the constantly changing functions and roles of the professional nurse. Clinical specialization in Community Health Nursing, Bio-psychological Nursing, and Psychiatric-Mental Health Nursing is provided.

The first three semesters emphasize advanced study in clinical nursing, both theory and practice, and advanced study of the natural and behavioral sciences, and an introduction to research methodology. In the fourth semester, the student may elect to concentrate in one of the functional areas — supervision and administration of nursing, or the teaching of nursing. Concurrent field practice is provided in both areas. As a third alternative, the student may choose to continue clinical study, concentrating in greater depth in some specialized area of the major field or in a second area of clinical interest.

The Division of Nursing Graduate Program is committed to Affirmative Action guidelines of the University of Massachusetts.

Candidates for admission, in addition to the minimum Graduate School requirements, must present evidence of:

- 1) Successful completion of a course in applied statistics.
- 2) Graduation from a baccalaureate program in nursing accredited by the National League for Nursing.
- 3) Evidence of academic ability, on the basis of the Graduate Record Examination and G.P.A.
- 4) Professional references indicating expectation of success in a graduate program.

### REQUIREMENTS FOR THE MASTER'S DEGREE IN NURSING INCLUDE:

1. Total of 48 credits, of which a minimum of 36 are in combined clinical nursing and related behavioral

and natural sciences and research. The remaining 12 credits may be in one of the functional areas of administration or teaching of nursing or may be devoted to the study of a specialized area in the major clinical field or a second clinical field.

2. Field practice, required of all students who elect a concentration in administration or teaching in the fourth semester.

3. Master's Thesis (Nursing 800) in a selected area of nursing. Must be completed by all students.

### CORE REQUIREMENTS FOR THE MASTER'S DEGREE IN NURSING INCLUDE:

#### Required of all Graduate Students in Nursing

Advanced Biometric Statistics

Inquiry and Research Methodology in Nursing

Master's Thesis

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### 708. RESEARCH TECHNIQUES IN NURSING

Assists nursing students in developing their own research projects. Organized around the process of inquiry which emphasizes the skills of critical thinking. Includes the procedure for developing research design and the application of experimental and descriptive methodological research techniques most appropriate to research in nursing. Prerequisite, Advanced Biometric Statistics.

### COURSES OPEN TO GRADUATE STUDENTS OF NURSING ONLY

#### Biopsychological Nursing

##### 703. MEDICAL-SURGICAL NURSING I.

Development of a working frame of reference relative to interactive behavior between nurses and clients. Various theories of behavior in regard to their clinical relevance. A goal-directed framework for nursing responses.

##### 704. MEDICAL-SURGICAL NURSING II.

The essential biological nature of humans in relation to homeostasis, reactions to stress and maladaptive states seen in illness. Emphasis on the way clinical data may be analyzed within a general systems framework which may be used as a clinical model for practice.

##### 705. MEDICAL-SURGICAL NURSING III.

A seminar associated with a clinical practicum both of which are designed to provide a model of clinical study and research. Includes modes of maintaining a cognitive base, practice expertise, investigative research and of initiating social change relevant to health care systems.

Prerequisites, Nursing 703, 704.

Credit, 6.

##### 706. MEDICAL-SURGICAL NURSING IV.

Guided study in selected areas of bio-psychological nursing. Activities include seminar, clinical practicum, investigative efforts and writing. Students design individual programs in collaboration with faculty preceptors to meet goals set in each of these areas.

Prerequisite, Nursing 705.

Credit, 6-12.

#### Mental Health Nursing

##### 709. PSYCHIATRIC NURSING I.

Theories about mental health, psychopathology and psy-

## OCEAN ENGINEERING

chotherapeutics; an overview of the wide range of concepts and principles applicable to mental health nursing practice and research. Each student studies in depth, a theoretical framework of his/her choice.

### 710 (A,B.) PSYCHIATRIC NURSING II.

Seminar and practicum in mental health nursing focusing on nursing care of individuals. Students establish one-to-one relationships with individuals suffering temporary emotional crises or long-term mental illness. Students are expected to sharpen their assessment skills and study the effects of life crises on individuals. Students apply theories of relationship therapy and current research in mental illness to their study of nursing practice with individuals. *Credit, 4.*

### 711. PSYCHIATRIC NURSING III.

Seminar and clinical practicum in mental health nursing focusing on groups of individuals. Students learn group therapy and leadership skills as they assume leadership and co-leadership roles with groups of clients who are experiencing emotional crisis or illness. Students integrate theory and research about group work with their study of nursing practice with groups of clients. *Credit, 4.*

### 712. PSYCHIATRIC NURSING IV.

Seminar and clinical practicum in mental health nursing focusing on families. Students focus on the family as a system in their study of single-family or multiple-family groups. Students apply theory and research about family dynamics and mental health to their study of nursing practice with families. *Credit, 4.*

## Community Health Nursing

### 715. COMMUNITY HEALTH NURSING I.

The interaction of two social sub-systems — health and the family. The effects of domestic organization and relationships on health, as well as the effects of health problems on domestic life. Patterns of family life seen in comparative, sometimes cross-cultural perspective; emphasis on sociological explanations of domestic and health behavior rather than on individualistic psychological explanations.

### 716. COMMUNITY HEALTH NURSING II.

Seminar and practicum on those aspects of a community directly influencing the health and nursing needs of people. Identification of the interactions and interrelationships between family and community that affect health care and health behavior. Evolving patterns in the delivery of health services.

### 717. COMMUNITY HEALTH NURSING III.

Seminar on the role of the community health nurse in the light of broader health issues. Participants select or create a definitive field work experience to develop a particular nursing role. This role must be justified in relation to current issues and problems in community health, i.e., fragmentation of health care, patient advocacy, hospital versus home care, racism and sexism in health systems. *Credit, 6.*

### 718. COMMUNITY HEALTH NURSING IV.

Additional clinical experience in independent study in Community Health Nursing. Objectives for such an experience must be clearly formulated between the student and the faculty sponsor. Students may negotiate for the number of credits according to time and effort required for the project. *Credit, 6-12.*

### 751. NURSING ADMINISTRATION SEMINAR.

The leadership role of the nursing administrator in the context of various theories of management and organization. Emphasis on the processes of policy formulation and decision-making and the administrator's role as a change agent in determining the character and quality of clinical nursing in an agency. Analysis of administrative problems encountered in concurrent field practice.

### 761. NURSING ADMINISTRATION FIELD PRACTICE.

Under guidance of the faculty adviser and the preceptor in

## GRADUATE SCHOOL

the agency, experiences in various hospital units. Experience and analysis of some of the administrative problems related to provision of direct nursing care. Opportunity to participate in the major activities and to carry selected responsibilities of either the administrator of a clinical department or the director of nursing services, depending upon student background. *Credit, 6.*

### 762. PRACTICUM IN TEACHING.

Experience in teaching in the classroom and clinical setting. Emphasis on experience and critical evaluation of the range of teaching methods cogent to a professional field. *Credit, 3-6.*

### 800. MASTER'S THESIS.

*Credit, 6.*

## Ocean Engineering

### GRADUATE FACULTY

(See under listed fields for degrees, institution, and years.)

DENTON B. HARRIS, *Assistant Professor of Civil Engineering and Coordinator of the Ocean Engineering Program.*

WILLIAM A. NASH, *Professor of Civil Engineering and Graduate Program Director.*

STANLEY M. BEMBEN, *Associate Professor of Civil Engineering.*

DUANE E. CROMACK, *Associate Professor of Mechanical Engineering.*

ROBERT W. DAY, *Professor of Mechanical Engineering.*

WILLIAM E. HERONEMUS, *Professor of Civil Engineering.*

FRANCIS S. HILL, JR., *Associate Professor of Electrical and Computer Engineering.*

KARL JAKUS, *Associate Professor of Mechanical Engineering.*

MELTON M. MILLER, JR., *Associate Professor of Civil Engineering.*

JOHN W. ZAHRADNIK, *Professor of Mechanical Engineering.*

## OCEAN ENGINEERING

Ocean Engineering is that activity which combines knowledge of the oceans with engineering skill to preserve and utilize the oceans, their contents and boundaries, for the achievement of human objectives.

The Ocean Engineering Program is administered as a degree-granting subdivision of the Civil Engineering Department; however, the administrative mechanism provided preserves the interdisciplinary nature of ocean engineering as an objective of academic pursuit. Present programs lead to the Master of Science in Ocean Engineering and Doctor of Philosophy degrees.



Programs leading to the degree of Master of Science in Ocean Engineering are designed to promote understanding of the ocean environment while developing greater competence in a field of engineering applicable to ocean-oriented technical problems. The holder of this degree is expected to have attained a general knowledge of ocean technology as it pertains to engineering endeavors. In addition to this breadth of knowledge he or she should have gained sufficient depth in his chosen professional specialty to approach ocean problems with confidence.

Doctoral study programs in ocean engineering have been designed to prepare individuals for high-level professional careers in academic, governmental, or industrial situations. Substantially greater competence in ocean technology is required of doctoral candidates, but professional breadth has not been sacrificed to attain this goal. Although the research leading to the doctoral dissertation assumes a predominant role in the study program, the problem-oriented character of professional engineering is preserved in selection of the research topic. Upon completion of an approved course of study, award of the doctoral degree indicates that the candidate has demonstrated excellence on a field of engineering which has significant relevance to ocean technology, and has acquired sufficient knowledge of oceanic processes to utilize this specialty with due regard for the ocean environment.

At least five "specialties" are identified among the ocean engineering courses:

1. Acoustics and Information Processing
2. Applied Physical Oceanography
3. Ocean Systems Engineering and Design
4. Ocean Structures and Materials, and
5. Aquacultural Engineering.

Each of these represents an area of specialized knowledge which is supported by courses from one or more of the traditional disciplines of engineering and science. Proficiency in at least one of the available specialties is required of candidates for the degree Master of Science in Ocean Engineering. Doctoral candidates are required to pursue at least one specialty in considerable depth, and proficiency in a second area is encouraged.

#### REQUIREMENTS FOR DEGREES IN OCEAN ENGINEERING

##### General

All appropriate University requirements, as listed in this *Bulletin*, must be fulfilled. It is further assumed that a student seeking a degree in Ocean Engineering will have a baccalaureate in either engineering or science, with sufficient mathematics, physics, and chemistry to undertake graduate studies in engineering. The potential degree candidate should be prepared to demonstrate an adequate proficiency in each of the following subject areas:

- 1) general chemistry and physics
- 2) calculus and elementary differential equations
- 3) engineering mechanics (statics, dynamics, fluid mechanics, strength of materials)
- 4) basic thermodynamics and heat transfer
- 5) basic electrical circuits, and
- 6) fundamental engineering skills (drafting, technical writing, and computer programming).

Degree candidates who are lacking proficiency in the

above areas may be required to undertake additional coursework to correct any deficiencies.

The ocean engineering core curriculum must be included in the program of every degree candidate. The core curriculum consists of five courses:

- 1) Engineering Oceanography - CE/OE 559 - 3 credits
- 2) Materials in the Ocean Environment - CE/OE 581 - 3 credits
- 3) Marine Design - CE/OE 591 - 4 credits
- 4) Public Policy and Use of the Seas - CE/OE 593 - 2 credits
- 5) Ocean Engineering Field Laboratory - CE/OE 795 - 3 credits.

All degree candidates are required to enroll in Ocean Engineering Seminar during each semester of their residence at the University. The credits earned through enrollment and participation in the seminar (one per semester) are in addition to the minimum already stipulated by the University for the degree.

#### MASTER OF SCIENCE IN OCEAN ENGINEERING

All candidates for this degree must complete a thesis which accounts for at least 6 credits in the program. The remaining credits of the 30 stipulated by the University for the M.S. degree may be satisfied by a selection of electives which are approved by the candidate's adviser. Electives are not restricted to ocean engineering courses but they must form a cohesive program with a clearly defined objective.

If coursework is pursued on a full-time basis, it is possible to complete the requirements for this degree in one calendar year. However, if financial aid is obtained through an assistantship, or if undergraduate deficiencies must be removed by additional coursework, a somewhat longer time will be necessary for completion of all requirements. Because some graduate courses can be offered only in alternate years, students are encouraged to plan for a two-year M.S. program.

#### DOCTOR OF PHILOSOPHY

No specific course requirements other than the core curriculum are prescribed for the doctoral program. It is the obligation of the candidate, under the direction of the adviser, to propose a unified program of study and research which will lead to the achievement of specified academic and professional objectives. The proposed program should reflect the philosophy of doctoral studies already set forth in this section; that is, a professional engineering viewpoint of ocean technology must be evident. The program must receive the unanimous approval of the candidate's Guidance Committee.

All candidates are required to obtain a first-hand familiarity with the oceanic environment. Normally, this experience can be obtained through responsible participation in a prolonged oceanographic cruise coastal laboratory research project. Faculty of the Ocean Engineering Program can provide assistance in the arrangement of the appropriate experience for the candidates.

If coursework and dissertation research are pursued on a full-time basis, it is possible to complete the requirements for the Ph.D. degree in approximately two calendar years following the award of the Master of Science degree. If financial aid is obtained through an assistantship, a somewhat longer time is necessary for completion of all requirements. Prospective candidates

## PHILOSOPHY

are urged to plan on the more realistic estimate of approximately three calendar years to complete the degree requirements following the award of the M.S. degree.

Preparation of dissertations *in absentia* generally is not approved.

### COURSE OFFERINGS IN OCEAN ENGINEERING

Study programs in Ocean Engineering typically consist of courses from two categories: (a) courses which are specifically oriented to ocean problems and thus carry the Ocean Engineering designation (an OE number) and (b) courses which enhance the preparation for any of the Ocean Engineering specialties but are not necessarily oriented to ocean problems. The proper selection of courses from both of these categories should ensure acquisition by the student of a broad ocean-associated knowledge combined with an acceptable level of professional competence. Ocean Engineering courses are grouped below according to recognized Program specialty areas. Course descriptions are given under the parenthesized departmental course numbers.

#### General

OE 559 (CE 559). ENGINEERING OCEANOGRAPHY.

OE 581 (CE 581). MATERIALS IN THE OCEAN ENVIRONMENT.

OE 591 (CE 591). MARINE DESIGN.

OE 593 (CE 593). PUBLIC POLICY AND THE USE OF THE SEAS.

OE 795 (CE 795). OCEAN ENGINEERING FIELD LABORATORY.

#### Acoustics and Information Processing

OE 587 (ECE 587). MARINE INSTRUMENTATION.

OE 764 (ECE 764). UNDERWATER ACOUSTICS.

#### Applied Physical Oceanography

OE 751 (CE 751). FLUID MECHANICS OF THE OCEANS.

OE 752 (CE 752). OCEAN WAVE THEORY.

OE 765 (CE 765). COASTAL AND ESTUARINE HYDRODYNAMICS.

#### Ocean Systems Engineering and Design

OE 590 (CE 590). ENGINEERING DESIGN AND SYSTEM PAYLOAD DEVICES.

OE 792 (CE 792). DEEP OCEAN SYSTEMS ENGINEERING AND DESIGN.

OE 794 (CE 794). FUNDAMENTALS OF NAVAL ARCHITECTURE.

#### Ocean Engineering Structures

OE 724 (CE 724). SUBMARINE SOIL MECHANICS AND FOUNDATION ENGINEERING.

OE 738 (CE 738). ANALYSIS AND DESIGN OF OCEAN ENGINEERING STRUCTURES.

OE 783 (CE 783). STRUCTURAL MECHANICS OF DEEP SUBMERSIBLE VEHICLES.

## GRADUATE SCHOOL

### Aquacultural Engineering

OE 555 (MAE 555). AQUACULTURAL ENGINEERING SYSTEMS.

## Philosophy

### GRADUATE FACULTY

ROBERT C. SLEIGH, JR., *Professor, Acting Chairman of the Graduate Faculty of Philosophy, and Acting Head of the Department of Philosophy*, A.B., Dartmouth, 1954; M.A., Brown, 1957; Ph.D., 1963.

JOHN G. ROBISON, *Associate Professor and Associate Head of the Department of Philosophy*, B.A., Georgia, 1957; M.A., Emory, 1958; Ph.D., Pennsylvania, 1962.

HERBERT HEIDELBERGER, *Professor and Graduate Program Director*, B.A., New York University, 1955; M.A., Princeton, 1960; Ph.D., 1962.

ROBERT ACKERMANN, *Professor*, A.B., Capital University, 1954; M.A., Ohio University, 1957; Ph.D., Michigan State, 1960.

BRUCE AUNE, *Professor*, A.B., Minnesota, 1955; M.A., 1957; Ph.D., 1960.

JOHN BENNETT, *Visiting Assistant Professor*, B.A., Swarthmore, 1966; Ph.D., Michigan, 1975.

JOHN A. BRENTLINGER, *Associate Professor*, A.B., Chicago, 1958; M.A., Yale, 1960; Ph.D., 1962.

VERE C. CHAPPELL, *Professor and Acting Associate Provost and Dean of the Graduate School*, B.A., Yale, 1951; M.A., 1953; Ph.D., 1958.

RODERICK M. CHISHOLM, *Adjunct Professor (Romeo Elton Professor of Natural Theology and Professor of Philosophy*, Brown University), A.B., Brown, 1938; A.M., Harvard, 1940; Ph.D., 1942.

LEONARD H. EHRLICH, *Professor*, B.S., Roosevelt, 1947; M.A., Yale, 1958; Ph.D., 1960.

JOSEPH EPSTEIN, *Professor* (Amherst College).

FRED FELDMAN, *Associate Professor*, B.A., Bard, 1963; M.A., Harpur, 1965; Ph.D., Brown, 1968.

ANN FERGUSON, *Associate Professor*, B.A., Swarthmore, 1959; M.A., Brown, 1961; Ph.D., 1965.

EDMUND L. GETTIER, III, *Professor*, B.A., Johns Hopkins, 1949; Ph.D., Cornell, 1961.

MICHAEL JUBIEN, *Assistant Professor*, A.B., Dartmouth, 1965; Ph.D., Rockefeller, 1972.

THOMAS R. KEARNS, *Assistant Professor* (Amherst College).

WILLIAM E. KENNICK, *Professor* (Amherst College).

MURRAY J. KITELEY, *Professor* (Smith College).

WILLIAM MARSH, *Associate Professor of Mathematics* (Hampshire College).

GARETH MATTHEWS, *Professor*, A.B., Franklin College, 1951; A.M., Harvard, 1952; Ph.D., 1961.

## UNIVERSITY OF MASSACHUSETTS

FELIX OPPENHEIM, *Professor of Political Science and of Philosophy.*

KATHRYN PYNE PARSONS, *Associate Professor* (Smith College).

TERENCE PARSONS, *Professor of Philosophy and of Linguistics*, B.A., Rochester, 1961; Ph.D., Stanford, 1966.

BARBARA HALL PARTEE, *Professor of Linguistics and of Philosophy*, B.A., Swarthmore, 1961; Ph.D., Massachusetts Institute of Technology, 1965.

RICHARD S. ROBIN, *Professor* (Mount Holyoke College).

DAVID S. SCHWARZ, *Assistant Professor* (Mount Holyoke College).

MALCOLM B. E. SMITH, *Associate Professor* (Smith College).

GEORGE V. TOVEY, *Professor* (Mount Holyoke College).

A. THOMAS TYMOCZKO, *Assistant Professor* (Smith College).

ROBERT PAUL WOLFF, *Professor*, A.B., Harvard, 1953, A.M., 1954; Ph.D., 1957.

Two graduate programs are offered in philosophy. The M.A. program is operated by the University's Department of Philosophy, and the Ph.D. program by its Graduate Faculty of Philosophy, which includes members of the Amherst, Hampshire, Mount Holyoke, and Smith College Faculties as well as the University Department.

### THE COOPERATIVE Ph.D. PROGRAM

The Ph.D. degree in philosophy is offered by the University in cooperation with Amherst, Hampshire, Mount Holyoke, and Smith Colleges. Though the degree is awarded by the University's Board of Trustees, a student may be in residence at any one of the five institutions; the institution of residence is noted on his permanent record.

The Cooperative Program in Philosophy is administered by the University's Graduate Faculty of Philosophy. This Faculty consists of all those teachers of philosophy at the five institutions who have been admitted to the Graduate Faculty of the University.

Admission to the Program is determined by the Graduate School upon recommendations by the Admissions Committee of the Faculty.

Upon entering the Program, each student is assigned a Faculty member as Adviser, who provides consultation concerning schedule of courses, progress, and any special problems encountered.

Students generally take four courses (12 credit hours) each semester during their first two years in the Program. The total course requirement for the Ph.D. degree is 16 courses (48 hours) exclusive of Philosophy 800 and 900. Of these 16, eight (24 hours) must be University philosophy courses numbered above 700. The remaining eight may include: up to six hours of Philosophy 700; University philosophy courses at the 500- or 600-level; comparable courses at the four cooperating Colleges or, with the approval of the Faculty's Gradu-

## PHILOSOPHY

ate Program Director, at other institutions; or, again with the approval of the Graduate Program Director, graduate courses in other fields at the University or the cooperating Colleges.

Nine of the 16 courses required for the Ph.D. degree must be distributed among three fields of philosophy, as follows: four in history of philosophy (at least one in ancient and two in modern philosophy), three in metaphysics and epistemology (at least one in each of metaphysics and epistemology), and two in ethics and value theory (at least one in ethics).

In addition to the Department course requirement, the University requires 18 hours of Philosophy 900.

There is no language requirement for the Ph.D. in philosophy.

By the end of their second year of graduate study (four semesters of being registered for one or more courses), students in the Program must have satisfied the Ph.D. logic requirement by earning a grade of B or better in two of the University Department's four 600-level logic courses, or the equivalent.

By the end of their third year of graduate study, except in special cases to be determined by the Faculty, students in the Program must have completed three acceptable "starred papers." The three papers must be written in three different fields of philosophy, one of which must be history of philosophy; the other starred paper fields are (1) philosophy of logic and philosophy of language; (2) philosophy of science; (3) metaphysics, epistemology, and philosophy of mind; (4) philosophy of religion and existential philosophy; and (5) ethics, political and social philosophy, and aesthetics. An acceptable starred paper is one that gives solid evidence of its author's ability to do the kind of original research that is required to produce a satisfactory dissertation in philosophy.

A starred paper may be submitted at any time during a student's first three years of graduate study; submissions during the first and second years are particularly encouraged.

Students in the Cooperative Ph.D. Program may receive the M.A. degree upon satisfying the Ph.D. course, logic, and starred paper requirements.

Having completed the course, logic, and starred paper requirements, students in the Program acquire a Dissertation Committee, which then oversees the rest of their work for the Ph.D. degree, replacing their adviser. This committee is formally appointed by the Dean of the Graduate School, on the recommendation of the Faculty's Graduate Program Director. The chairman of the Dissertation Committee is the director of the student's dissertation.

When the dissertation is finished, it is submitted to the Dissertation Committee for judgment. If, and only if, the committee approves it unanimously, the Final Oral Examination is scheduled.

The Final Oral Examination is conducted by the Dissertation Committee. The examination is open to the University Community at large, students and faculty, and any member of the Philosophy Faculty may participate in the questioning of the candidate. Only the members of the Dissertation Committee, however, take part in judging the candidate's performance; their vote must be unanimous in order for the examination to be passed.

Having passed the Final Oral, the student then has the dissertation finally typed, according to the specifications given in the *Graduate School Handbook*. The typed original and one copy must be submitted to the



## PHILOSOPHY

Graduate School, and a second copy, bound, to the Faculty of Philosophy, by the Graduate School deadlines for the May, September, or February graduations, respectively.

### THE M.A. PROGRAM

The M.A. Program in Philosophy is administered by the University's Department of Philosophy.

Admission to the Program is determined by the Graduate School upon recommendations made by the Department's Admissions Committee.

Upon entering the Program, each student is assigned a Department member as Adviser, who provides consultation concerning schedule of courses, progress, and any special problems encountered.

Students generally take four courses (12 credit hours) each semester during their first year in the Program. The total course requirement for the M.A. degree is 10 courses (30 hours). Of these 10, four (12 hours) must be University philosophy courses numbered above 700, exclusive of Philosophy 800. The remaining six may include: up to six hours of Philosophy 700; six hours of Philosophy 800 (for students who write a thesis); University philosophy courses at the 500- or 600-level; comparable courses at Amherst, Hampshire, Mount Holyoke, and Smith Colleges; or, with the approval of the Department's Graduate Program Director, up to six hours of graduate courses in other fields at the University or the four Colleges.

Six of the 10 courses required for the M.A. degree must be distributed among three fields of philosophy, as follows: three in history of philosophy (at least one in ancient and one in modern philosophy), two in metaphysics and epistemology, and one in ethics and value theory.

There is no language requirement for the M.A. in philosophy.

During their second semester of graduate study, students in the Program choose one of two alternative ways, Option A or B, below, of completing the requirements for the M.A. degree.

*Option A.* Under this option, students are required to complete two acceptable Ph.D. starred papers, one each in any two of the six starred paper fields. They then take an oral examination, conducted by the Department, which is based mainly on, though not necessarily restricted to, their starred papers.

*Option B.* Under this option, students write a Master's thesis, under the supervision of a Thesis Committee. This committee is formally appointed by the Dean of the Graduate School, on the recommendation of the Department's Graduate Program Director, after the student has completed eight of the 10 courses required for the M.A. degree. Six hours of Philosophy 800 may then be used for the remaining two courses. When the thesis is finished and has been approved by the committee unanimously, the student takes a Final Oral Examination, conducted by the committee, whose vote on the student's performance must be unanimous in order for a passing grade to be given. Having passed this examination, the student then has the thesis finally typed and bound, according to the specifications given in the Graduate School Handbook. The dates for submitting the thesis to the Graduate School are the same as those given above for the Ph.D. dissertation.

All requirements for the M.A. degree under both Option A and Option B must be completed within two

## GRADUATE SCHOOL

calendar years of a student's first enrollment in the Program.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY

- |                                                |                   |
|------------------------------------------------|-------------------|
| 700. RESEARCH AND READING IN PHILOSOPHY.       |                   |
| 705. PROSEMINAR.                               | Mr. Feldman.      |
| 710. SELECTED PHILOSOPHER I.                   | Mr. Chappell.     |
| 711. SELECTED PHILOSOPHER II.                  | Mr. Sleigh.       |
| 715. PLATO.                                    |                   |
| 720. KANT I.                                   | Mr. Ehrlich.      |
| 721. KANT II.                                  | Mr. Wolff.        |
| 725. EXISTENTIAL PHILOSOPHY.                   |                   |
| 740. FORMAL LOGIC.                             | Mr. Jubien.       |
| 745. ETHICS.                                   | Mr. Aune.         |
| 750. PHILOSOPHY OF EDUCATION.                  |                   |
| 751. PHILOSOPHY OF RELIGION.                   |                   |
| 755. PHILOSOPHY OF LANGUAGE.                   | Mr. Parsons.      |
| 756. PHILOSOPHY OF SCIENCE.                    | Mr. Ackermann.    |
| 760. METAPHYSICS.                              | Mr. Heidelberger. |
| 761. PHILOSOPHY OF MIND.                       | Mr. Matthews.     |
| 765. THEORY OF KNOWLEDGE.                      | Mr. Gettier.      |
| 780. PROBLEMS IN THE HISTORY OF PHILOSOPHY I.  | Ms. Sirridge.     |
| 781. PROBLEMS IN THE HISTORY OF PHILOSOPHY II. | Mr. Robison.      |
| 790. SEMINAR.                                  | Mr. Chisholm.     |
| 791. SEMINAR.                                  | Ms. Partee.       |
| 800. MASTER'S THESIS.                          |                   |
| 900. DOCTORAL DISSERTATION.                    | Credit, 18.       |

#### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

- |                                        |                  |
|----------------------------------------|------------------|
| 501. PLATO AND ARISTOTLE.              | Mr. Chappell.    |
| 502. MEDIEVAL PHILOSOPHY.              | Mr. Brentlinger. |
| 503. CONTINENTAL RATIONALISM.          | Mr. Sleigh.      |
| 504. BRITISH EMPIRICISM.               | Mr. Foster.      |
| 505. KANT AND 19TH-CENTURY PHILOSOPHY. | Mr. Ehrlich.     |
| 518. AMERICAN PHILOSOPHY.              | Mr. Robison.     |
| 525. INDIAN PHILOSOPHIES.              |                  |
| 526. EAST ASIAN PHILOSOPHIES.          |                  |
| 530. INTERMEDIATE LOGIC.               | Mr. Jubien.      |

UNIVERSITY OF MASSACHUSETTS

- 531. FORMAL FOUNDATIONS OF LINGUISTIC THEORY. Ms. Partee.
- 543. PHILOSOPHY OF ART. Ms. Sirridge.
- 561. CONTEMPORARY ANALYTIC PHILOSOPHY. Mr. Heidelberger.
- 563. MARXISM Mr. Brentlinger.
- 564. EXISTENTIAL PHILOSOPHIES. Ms. Sirridge.
- 640. PHILOSOPHY OF SCIENCE. Mr. Foster.
- 641. PHILOSOPHY OF RELIGION Mr. Ackermann.
- 642. POLITICAL PHILOSOPHY. Mr. Oppenheim.
- 643. AESTHETICS. Ms. Ferguson.
- 644. EPISTEMOLOGY. Mr. Ackermann.
- 645. METAPHYSICS. Mr. Aune.
- 646. PHILOSOPHY OF LANGUAGE. Ms. Parsons.
- 650. HISTORY OF ETHICS. Mr. Smith.
- 651. ETHICAL THEORY. Mr. Feldman.
- 665. PHILOSOPHICAL THEOLOGY. Mr. Ehrlich.
- 671. PHILOSOPHY AND LOGIC. Mr. Sleigh.
- 672. MATHEMATICAL LOGIC I. Mr. Parsons.
- 673. MATHEMATICAL LOGIC II. Mr. Marsh.
- 674. PHILOSOPHY OF MATHEMATICS. Mr. Jubien.
- 681. SELECTED ANCIENT OR MEDIEVAL PHILOSOPHER. Mr. Matthews.
- 682. SELECTED MODERN CONTINENTAL PHILOSOPHER.
- 683. SELECTED MODERN BRITISH PHILOSOPHER. Mr. Wolff.
- 684. CONTEMPORARY PROBLEMS. Mr. Schwarz, Mr. Tymoczko.
- 691. SEMINAR. Mr. Kearns.
- 692. SEMINAR. Mr. Kiteley.

PHYSICS

ARTHUR R. SWIFT, *Professor and Graduate Program Director in Physics and Astronomy*, B.A., Swarthmore, 1960; Ph.D., Pennsylvania, 1964.

THOMAS T. ARNY, *Associate Professor of Astronomy*.

JOHN J. BREHM, *Professor*, B.S., Maryland, 1956; M.S., Cornell, 1959; Ph.D., Maryland, 1963.

EDWARD S. CHANG, *Associate Professor*, B.A., California at Riverside, 1961; M.A., 1964; Ph.D., 1967.

LEROY F. COOK, *Professor*, B.A., California at Berkeley, 1953; M.A., 1957; Ph.D., 1959.

WILLIAM A. DENT, *Associate Professor of Astronomy*.

STANLEY ENGELSBERG, *Professor*, B.S., Massachusetts Institute of Technology, 1955; M.A., Harvard, 1957; Ph.D., 1961.

NORMAN C. FORD, *Associate Professor*, B.S., Massachusetts Institute of Technology, 1953; M.A., Syracuse, 1960; Ph.D., California at Berkeley, 1964.

WILLIAM J. GERACE, *Associate Professor*, B.S., Massachusetts Institute of Technology, 1963; Ph.D., Princeton, 1967.

H. MARK GOLDENBERG, *Associate Professor*, B.S., California Institute of Technology, 1956; M.S., Harvard, 1957; Ph.D., 1960.

EUGENE GOLOWICH, *Professor*, B.S., Rensselaer Polytechnic Institute, 1961; Ph.D., Cornell, 1965.

ROBERT A. GUYER, *Professor*, B.S., New Mexico State, 1959; Ph.D., Cornell, 1966.

ROBERT B. HALLOCK, *Associate Professor*, B.S., Massachusetts, 1965; M.S., Stanford, 1967; Ph.D., 1969.

EDWARD R. HARRISON, *Professor of Astronomy*.

SANLEY S. HERTZBACH, *Associate Professor*, B.E.S., Johns Hopkins, 1959; Ph.D., 1965.

BARRY R. HOLSTEIN, *Associate Professor*, B.S., Carnegie Institute of Technology, 1965; M.S., 1967; Ph.D., Carnegie-Mellon University, 1969.

G. RICHARD HUGENIN, *Professor of Astronomy*.

WILLIAM M. IRVINE, *Professor of Astronomy and Head of the Astronomy Program*.

PHILLIPS R. JONES, *Professor*, B.S., Massachusetts, 1951; M.S., Connecticut, 1956; Ph.D., 1959.

JOSEPH W. KANE, *Assistant Professor*, B.S., Wisconsin at Milwaukee, 1961; M.S., Illinois, 1962; Ph.D., 1966.

RICHARD R. KOELER, *Associate Professor*, B.S., Marquette University, 1958; M.S., Wisconsin, 1960; Ph.D., 1964.

MICHAEL N. KREISLER, *Professor and Associate Dean of the Graduate School*, B.A., Princeton, 1962; M.S., Stanford, 1963; Ph.D., 1966.

ROBERT V. KROTKOV, *Professor*, B.A., Queens University, Canada, 1951; M.S., 1952; Ph.D., Princeton, 1958.

KENNETH H. LANGLEY, *Associate Professor*, B.S., Massachusetts Institute of Technology, 1958; Ph.D., California at Berkeley, 1966.

WILLIAM J. MULLIN, *Associate Professor*, B.S., St. Louis University, 1956; Ph.D., Washington University (St. Louis), 1965.

Physics

GRADUATE FACULTY

FREDERICK W. BRYON, JR., *Professor of Physics and Head of the Department of Physics and Astronomy*, B.A., Harvard, 1959; Ph.D., Columbia, 1963.

## PHYSICS

CLAUDE M. PENCHINA, *Professor*, B.E., Cooper Union, 1959; M.S., Syracuse, 1961; Ph.D., 1964.

GERALD A. PETERSON, *Professor*, B.S., Purdue, 1953; M.A., 1955; Ph.D., Stanford, 1962.

FRANCIS PICHANICK, *Associate Professor*, B.S., University of Capetown, South Africa, 1957; M.S., 1958; Ph.D., Oxford University, England, 1961.

ARTHUR R. QUINTON, *Professor*, B.S., Queen Mary College, London University, England, 1944; M.S., University of Western Ontario, Canada, 1951; Ph.D., Yale, 1954.

MONROE S. RABIN, *Associate Professor*, B.A., Columbia, 1961; M.S., Rutgers, 1964; Ph.D., Rutgers, 1967.

PHILIP ROSEN, *Professor*, B.S., City College of New York, 1944; M.S., Yale, 1946; Ph.D., 1949.

KANDULA S. R. SASTRY, *Associate Professor*, B.S., Andhra University, India, 1955; M.S., 1956; Ph.D., Indiana, 1962.

NICHOLAS SCOVILLE, *Assistant Professor of Astronomy*.

JANICE BUTTON SHAFER, *Professor*, B.E.P., Cornell, 1954; Ph.D., California at Berkeley, 1959.

EDWARD A. SOLTYSIK, *Professor*, B.S., Lafayette, 1950; M.S., Indiana, 1952; Ph.D., 1956.

MORTON M. STERNHEIM, *Professor*, B.S., City College of New York, 1954; M.S., New York University, 1956; Ph.D., Columbia, 1961.

EUGENE TADEMARU, *Assistant Professor of Astronomy*.

JOSEPH H. TAYLOR, JR., *Associate Professor of Astronomy*.

DAVID J. VAN BLERKOM, *Associate Professor of Astronomy*.

JAMES F. WALKER, *Associate Professor*, B.S., Minnesota, 1959; M.S., 1961; Ph.D., 1964.

DAVID V. WEBB, *Assistant Professor*, B.Sc., University of Melbourne, Australia, 1963; Ph.D., 1970.

Graduate degrees are offered in both physics and astronomy by the Department. Candidates planning to major in astronomy are referred to the description of the astronomy program (see Astronomy).

The general requirements for the Ph.D. in Physics are those of the Graduate School. These are implemented along the following lines. During the first two years, a student takes a normal load of basic courses. The basic courses of the program are 701, 702, 703, 704, 705, 706, 707, 709, 710, 714, 715, 718, 719. The student must complete a research requirement of three research-oriented courses. Two of these must be outside of the student's area of specialization. After passing the qualifying examination, normally in the second year, the student is expected to devote his or her major effort to research. Courses taken during this period usually are in the student's research field. The department requires no foreign-language reading competency for the doctorate.

All degree candidates are required to perform teaching in the department. A waiver of this requirement must be requested from the graduate studies committee.

The requirements for the master's degree consist of 30 graduate credits, at least 15 of which shall be in the 700-900 courses, and at least 21 of which shall be in

## GRADUATE SCHOOL

physics. The 15 credits of 700-900 courses shall include one course in the basic Quantum Mechanics sequence or its equivalent, and may include 6 credits of master's thesis, Physics 800. At least five courses in physics must be passed with a grade of A or B, and a general examination must be passed before the degree is awarded.

Candidates planning to major in physics should have completed at least (preferably, more than) 15 semester credit hours in undergraduate physics beyond an introductory course (such as Physics 161, 162, 163) and also 6 credits of mathematics beyond college-level calculus.

### MASTER OF ARTS IN TEACHING (MAT) PROGRAM IN PHYSICS

The Master of Arts in Teaching Degree (MAT) is offered, in cooperation with the School of Education, to candidates interested in physics teaching at the secondary school level.

The program requires 39 credits distributed as follows: Physics or physics-related courses, 21 credits; Education courses, 9 credits; Internship or equivalent practicum, 9 credits. The education credits must include at least two of these four areas: educational psychology, philosophy of education, methods and materials, and curriculum development.

For the community-college level option 45 credits are required, distributed as follows: Physics or physics-related courses, 24 credits; Education courses (including curriculum) teaching clinic, directed observation, advising and counselling, and philosophy of education, 12 credits; Internship or equivalent practicum, 9 credits.

*Prerequisites for Admission:* A bachelor's degree with a major in one of the physical sciences, adequate training in mathematics, and a 2.75 minimum grade point average.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY

##### 700. INDEPENDENT STUDY.

Special study in some branch of physics, either theoretical or experimental, under direction of a faculty member. A written proposal must be submitted to that faculty member and to the Head of the Department for approval prior to registration.

##### 701. CLASSICAL MECHANICS.

Lagrange's and Hamilton's equations, central force problem, rigid bodies, small oscillations, continuum mechanics, fluid dynamics.

*Prerequisites:* Physics 552, 556, and Math 241.

##### 702. STATISTICAL PHYSICS.

Survey of thermodynamics, Boltzmann distribution, statistical interpretation of thermodynamics, Gibbsian ensembles and the method of Darwin, Fowler; quantum distributions and their applications, transport phenomena.

*Prerequisites:* Physics 701, 703, and 706 (the latter may be taken concurrently.)

##### 703. INTRODUCTORY QUANTUM MECHANICS I.

Breakdown of classical physics, wave mechanics including the Schrodinger equation and its interpretation, one-dimensional problems, uncertainty principle, harmonic oscillator, hydrogen atom.

*Prerequisites:* Physics 701 and 705 (both may be taken concurrently.)



**704. INTERMEDIATE QUANTUM MECHANICS II.**

Abstract quantum mechanics, linear algebra and Hilbert space, representation theory, three-dimensional problems, orbital angular momentum spins, vector coupling.  
Prerequisites, Physics 703, or equivalent.

**705. METHODS OF MATHEMATICAL PHYSICS.**

Selected topics with application to physics in linear algebra and Hilbert space theory, complex variables, Green's functions, partial differential equations, integral transforms, integral equations.  
*Credit, 4*

**706. CLASSICAL ELECTRODYNAMICS I.**

Electrostatic fields in vacuum and material media, two and three dimensional potential problems, the magnetostatic field, interaction of steady currents, Maxwell's equations, the electromagnetic field, special relativity, and covariant formulation of electrodynamics.  
Prerequisites, Physics 701 and 705.

**707. CLASSICAL ELECTRODYNAMICS II.**

The field of a moving charge, the Lienard-Wiechert potentials, Lorentz transformation and special relativity, covariant formulation of Maxwell's equations. Radiation of electromagnetic waves; the near field and far field, radiation damping and self fields, spectral resolution of radiation. Magnetohydrodynamics and plasma physics, collisions, scattering and absorption.  
Prerequisite, Physics 706.

**709. INTERMEDIATE QUANTUM MECHANICS III**

Approximation methods, WKB, bound State perturbation theory, time-dependent perturbation theory, variational method, selfconsistent techniques, scattering theory.  
Prerequisite, Physics 704.

**710. ADVANCED QUANTUM MECHANICS IV.**

Semi-classical radiation theory, non-relativistic second quantization, advanced scattering theory; relativistic wave-equations.  
Prerequisite, Physics 709.

**715. INTRODUCTORY SOLID STATE PHYSICS.**

Solids treated as translational symmetry structures, and their effect in x-ray and particle scattering, thermal and vibrational properties of solids, Binding energy of solids, electronics in periodic potentials, and the formation of bands. The free electron model of metals.  
Prerequisite, Physics 704.

**717. PLASMA PHYSICS.**

Properties of plasma, equation of motion, particle versus continuum description, magnetohydrodynamics, stabilities, linear theory of waves and oscillations. Landau damping, nonlinear effects and transport phenomena.  
Prerequisites, Physics 702, 707.

**718. BASIC PHYSICS OF ATOMS AND MOLECULES.**

Quantum description of free atoms and molecules and their interactions with external fields, radiation, and electrons.

**719. NUCLEAR PHYSICS.**

Basic concepts of nuclear physics, instruments and methods. Topics include natural radioactivity, nuclear radiations — their properties and interaction with matter, nuclear-radiation detectors, electrostatic and magnetic analyzers, mass spectrometry, charged particle accelerators, elementary discussion of alpha and beta decay, nuclear isomerism, internal conversion, nuclear reactions, neutron physics, fissions, nuclear spin and magnetic moments, cosmic rays and elementary particles.  
Prerequisite, Physics 703 or equivalent.

**723. TOPICS IN MATHEMATICAL PHYSICS.**

Subjects vary somewhat depending on the instructor, but probably include applications of the theory of functions, group theory and symmetries, Hilbert and Banach spaces in quantum mechanics.  
Prerequisites, Physics 705 and permission of instructor.

**724. GROUP THEORY IN QUANTUM MECHANICS.**

Finite dimensional groups and their representations; representations of the permutation group; representations of SU<sub>n</sub>, tensor representations, decomposition of direct product representations; three-dimensional rotation group, Clebsch-Gordon and Racah coefficients; the Lorentz group and its representations; applications to atomic, solid state, nuclear, and high energy physics.  
Prerequisite, Physics 709.

**811 (I), 812 (II). FIELD THEORY**

Relativistic quantum mechanics of a single particle. Klein-Gordon and Dirac equations, formal scattering theory, field quantization, interacting fields, S-matrix, reduction formulae, perturbation theory and Feynman diagrams renormalization, dispersion relations, and recent developments.  
Prerequisites, Physics 709 (may be taken concurrently) for 811; Physics 811 for 812.

**813. HIGH ENERGY PHYSICS.**

Experimental and theoretical aspects of: meson and baryon resonances; leptonic and non-leptonic, strangeness changing and non-changing weak decays; high energy experiments and the phenomenology of Regge poles.  
Topics vary with the instructor.  
Prerequisite, Physics 714.

**816. SOLID STATE PHYSICS**

Transport phenomena in solids including semiconductors, optical properties of solids, superconductivity, superfluidity, magnetism. Topics vary with the instructor.  
Prerequisite, Physics 715.

**817. ADVANCED STATISTICAL PHYSICS**

Phase transitions, including condensation; description of imperfect gases. Transport theory and other nonequilibrium phenomena. Irreversible processes. Field theoretic quantum statistical physics.  
Prerequisites, Physics 702, 811.

**818. ATOMIC STRUCTURE.**

An advanced course covering the field of atomic structure including the theory of complex spectra, fine structure, hyperfine structure, electron spin, Zeeman effect, the theory of atomic collisions, general theory of multiplets and magnetic and radiative properties of atoms.  
Prerequisite, Physics 709.

**820. NUCLEAR THEORY**

A theoretical understanding of nuclear structure. Topics include internuclear forces, the deuteron and the two-body problem, nuclear models and structure of complex nuclei, electromagnetic properties of nuclei, theory of alpha and beta decay, theory of nuclear reactions.  
Prerequisites, Physics 709 and 719.

**821. RELATIVITY.**

Mathematical and conceptual aspects of the special and general theories of relativity. Lorentz transformations, covariant formulation of the laws of nature. The equivalence principle, curved spaces, solutions of the equations of relativity.  
Prerequisites, Physics 701, 706.

**850. ADVANCED TOPICS IN PHYSICS.**

One or more subjects of special interest covered in lectures.  
Prerequisite, permission of instructor.

**851. SPECIAL TOPICS IN NUCLEAR PHYSICS.**

Advanced and current topics in nuclear physics.  
Prerequisite, Physics 820.

**852. SPECIAL TOPICS IN HIGH ENERGY PHYSICS.**

Advanced and current topics in high energy physics.  
Prerequisite, Physics 813.

**853. SPECIAL TOPICS IN SOLID STATE PHYSICS.**

Advanced and current topics in solid state physics.  
Prerequisite, Physics 816.

## PLANT AND SOIL SCIENCES

### 854. SPECIAL TOPICS IN ATOMIC PHYSICS.

Advanced and current topics in atomic physics.  
Prerequisite, Physics 818.

### 860. SEMINAR ON RESEARCH TOPICS.

Instruction via reading assignments and seminars on research topics not currently covered in regular courses.  
Prerequisite, permission of instructor. *Credit, 1-3.*

### 800. MASTER'S THESIS.

*Credit, 6.*

### 900. DOCTORAL DISSERTATION.

*Credit, 18.*

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

#### 564. WAVE MOTION.

Physical optics, acoustics, and other wave phenomena in a single unified structure.  
Prerequisite, Physics 552.

#### 571 (I), 572 (II). STATISTICAL PHYSICS.

Thermodynamics, kinetic theory, and statistical mechanics in a single unified structure.  
Prerequisites, Physics 552, 556. *Credit, 3 each semester.*

#### 585. MODERN PHYSICS I.

Review of classical mechanics, theory of relativity, black body radiation, photoelectric effect, Compton effect, background for development of quantum mechanics, Bohr atom.  
Prerequisites, Physics 552, 556.

#### 586. MODERN PHYSICS II AND QUANTUM MECHANICS.

Quantum mechanics, applications to atomic and nuclear physics, such as atomic spectra, Zeeman effect, angular momentum, barrier penetration.  
Prerequisite, Physics 585. *Credit, 4.*

#### 588. SOLID STATE PHYSICS.

An introduction to theoretical and experimental physics of the solid state.  
Prerequisite, Physics 585.

#### 619. ELECTRONICS INSTRUMENTATION.

A laboratory-oriented course designed expressly for physicists and chemists. Basic electronics principles, servo systems, operational amplifiers, digital circuits, other modern devices.  
Prerequisite, permission of instructor.

#### 620. RADIATION PHYSICS.

For science majors specializing in nuclear medicine, radiology, environmental sciences, radiation protection, and applied areas using ionizing radiations. Principles of atoms and nuclei, radioactivity, interaction of radiation with matter, radiation detectors and methods, applications of radioactive and stable nuclei as tracers. Special topics.  
Three lectures weekly; three-hour laboratory once every two weeks.

Prerequisite, permission of instructor. *Credit, 4.*

#### 675 (I), 676 (II). ADVANCED EXPERIMENTAL WORK.

Selected experiments and projects, according to the needs of individual student.  
Prerequisite, Physics 551. *Credit, 1 to 3 each semester.*

(For major credit subject to approval of Graduate Studies Committee)

#### 551. ELECTRICITY AND MAGNETISM I.

Classical field theory, static electric fields and magnetic fields of steady currents. Scalar and vector potentials, Laplace's equation and its solutions.  
Prerequisites, Physics 142 or 162 or 183; Math 174 or 186.

#### 552. ELECTRICITY AND MAGNETISM II.

Continuation of 551. Time varying fields, Maxwell's equations, and applications to radiation.  
Prerequisites, Physics 551 and Math 187 or 343.

#### 555 (I), 556 (II). MECHANICS.

Development of the fundamental concept of dynamics with applications to particles and rigid bodies in translation and rotation.

Prerequisites Physics 142, 162 or 184; Math 174 or 186.

*Credit, 3 each semester.*

## Plant and Soil Sciences

### GRADUATE FACULTY

FRANKLIN W. SOUTHWICK, *Professor of Plant Science and Head of the Department of Plant and Soil Sciences*, B.S., Massachusetts, 1939; M.S., Ohio State, 1940; Ph.D., Cornell, 1943.

HERBERT V. MARSH, *Professor of Plant Science and Graduate Program Director*, B.S., Massachusetts, 1954; M.S., 1958; Ph.D., North Carolina State, 1961.

JOHN H. BAKER, *Professor of Soil Science*, B.S., Massachusetts, 1952; M.S., Cornell, 1954; Ph.D., 1959.

ALLEN V. BARKER, *Professor of Plant and Soil Science*, B.S., Illinois, 1958; M.S., Cornell, 1959; Ph.D., 1962.

ALFRED W. BOICOURT, *Professor of Plant Science*, B.S., Cornell, 1938; M.S., 1941.

WILLIAM J. BRAMLAGE, *Professor of Plant Science*, B.S., Ohio State, 1959; M.S., Maryland, 1961; Ph.D., 1963.

ROBERT N. CARROW, *Assistant Professor of Plant and Soil Science*, B.S., Michigan State, 1968; Ph.D., 1972.

MACK DRAKE, *Professor of Plant and Soil Science*, B.S., Purdue, 1937; M.S., Purdue and Alabama Polytechnic, 1939; Ph.D., 1946.

WALTON C. GALINAT, *Professor of Plant Science*, Ph.D., University of Wisconsin, 1953.

GEORGE B. GODDARD, *Associate Professor of Plant Science*, B.S., Massachusetts, 1954; M.S., 1958; Ph.D., 1963.

DUANE W. GREENE, *Associate Professor of Plant Science*, B.S., Colgate, 1964; M.S., Michigan State, 1966; Ph.D., 1969.

HAIM B. GUNNER, *Professor of Environmental Sciences*, B.S.A., University of Toronto, 1946; M.Sc., University of Manitoba, 1948; Ph.D., Cornell, 1962.

JOHN R. HAVIS, *Professor of Plant Science*, B.S., Texas Technological College, 1942; M.S., Cornell, 1947; Ph.D., 1949.

PAUL H. JENNINGS, *Associate Professor of Plant Science*, B.V.A., Massachusetts, 1960; M.S., North Carolina State, 1962; Ph.D., 1965.

MARY B. KIRKHAM, *Assistant Professor of Plant Science*, B.A., Wellesley, 1966; M.S., University of Wisconsin, 1969; Ph.D., 1971.

WILLIAM H. LACHMAN, *Professor of Plant Science*, B.S., Pennsylvania State, 1934; M.S., 1936.

WILLIAM J. LORD, *Professor of Plant Science*, B.S., New Hampshire, 1943; M.S., 1953; Ph.D., Pennsylvania State, 1955.

## UNIVERSITY OF MASSACHUSETTS

DONALD N. MAYNARD, *Professor of Plant Science*, B.S., Connecticut, 1954; M.S., North Carolina State, 1956; Ph.D., Massachusetts, 1963.

WILLIAM A. ROSENAU, *Associate Professor of Plant and Soil Science*, B.S., Yale, 1948; M.S., Connecticut, 1950; Ph.D., Pennsylvania State, 1961.

GORDON L. STEWART, *Associate Professor of Soil Science*, B.S., Utah State, 1955; M.S., 1957; Ph.D., Washington State, 1962.

CECIL L. THOMPSON, *Professor of Plant Science*, B.S.A., University of Toronto, 1937; M.S., University of Minnesota, 1945.

JOSEPH TROLL, *Professor of Plant Science*, B.S., Rhode Island, 1954; M.S., 1957; Ph.D., Massachusetts, 1965.

JONAS VENGRIŠ, *Professor of Plant Science*, Agr. College, Lithuania, 1934; Diploma, 1936; Dr. Agr. Sci., University of Bonn, Germany, 1939.

DONALD M. VIETOR, *Assistant Professor of Plant Science*, B.S., Minnesota, 1967; M.S., 1969; Ph.D., Cornell, 1975.

MARTIN E. WEIKS, *Professor of Plant and Soil Science*, B.S., South Dakota State, 1934; Ph.D., Wisconsin, 1937.

JOHN M. ZAK, *Professor of Plant and Soil Science*, B.S., Massachusetts, 1936; M.S., 1938.

The Department of Plant and Soil Sciences offers doctoral work in either Plant Science or Soil Science. Specialization and thesis problems related to horticultural and agronomic plants and in soil science are available to both Master of Science and Doctor of Philosophy degree candidates.

The department has no foreign-language requirement for the doctoral degree.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

##### 700, 701. SPECIAL PROBLEMS.

Selected research problems are not related to a candidate's thesis. *Credit, 3 each semester.*

##### 702, 703. RESEARCH LITERATURE.

A critical review of the scientific literature in an area of specialization. *Credit, 3 each semester.*

##### 710. MORPHOLOGY OF ECONOMIC PLANTS.

The anatomy of the plant body with emphasis on those structures which have horticultural and agronomic significance. Prerequisite, Botany 291 or permission of instructor.

Mr. Goddard.

##### 715. PLANT GROWTH REGULATORS.

Recent advances in the field of plant growth regulators; including phytochromes, auxins, gibberellins, kinins and herbicides. Emphasis on investigations of the mechanisms whereby these materials control plant growth and development.

Prerequisites, Botany 511 and one semester of biochemistry. Mr. Marsh, Mr. Rubenstein.

##### 717. WATER AND TEMPERATURE STRESS IN PLANTS.

Concepts of water absorption and distribution; factors in development of plant water stress. Low temperature injury and acclimation in plants.

Prerequisites, Botany 511 or permission of instructor. Mr. Havis.

## PLANT AND SOIL SCIENCES

### 730. ADVANCED SOIL CHEMISTRY.

Lecture and discussion of current theories of the chemistry of soils.

Prerequisite, permission of instructor. Mr. Baker

### 745. MICROBIAL ECOLOGY OF THE SOIL.

The biochemistry and physiology of interactions among micro-organisms in the soil environment and their relationships with the soil environment. Lectures, discussion and a critical review of current literature.

Prerequisite: Plant and Soil Sci 615 or permission of instructor. Mr. Gunner.

### 750. PLANT PHOTOSYNTHESIS.

Lectures and discussions of the mechanisms, requirements, evolution and specific related processes. Extensive study of the basic literature required.

Prerequisite, Botany 512, or Chem 524, or equivalent. Mr. Barker.

### 760. NITROGEN METABOLISM.

A comprehensive presentation of nitrogen metabolism in plants. The biological mechanisms of nitrogen absorption, synthesis, and degradation of nitrogenous compounds, nitrogen fixation, specific roles of nitrogenous compounds and nitrogen toxicities.

Prerequisite, Botany 512, or Chem 524, or equivalent. Mr. Barker.

### 791. SEMINAR.

Required of all graduate students majoring in the Department. *Credit, 1 each semester.*

### 800. MASTER'S THESIS.

*Credit, 10.*

### 900. DOCTORAL DISSERTATION. *Maximum credit, 18*

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

#### 550. FORAGE AND FIELD CROPS.

Discussion of aspects of the physiology, morphology, seedling establishment, fertilization, harvest management, and storage of forage and field crop species.

Mr. Vietor

#### 555. AGROSTOLOGY.

The establishment and maintenance of turf grasses used on lawns, athletic fields, highways, airports, and cemeteries.

Mr. Troll.

#### 615. MICROBIOLOGY OF THE SOIL.

Soil microorganisms; their distribution, ecology and transformation of organic and inorganic substrates. Microbiology of the rhizosphere and the biological equilibrium.

Prerequisite, Microbiol 250 or permission of instructor. Mr. Gunner

#### 630. PLANT NUTRITION.

The accumulation and transport of inorganic ions in plants and their function in plant metabolism.

Mr. Maynard

#### 635. TAXONOMY OF ECONOMIC PLANTS.

Plant families, genera, species, and cultivars of importance in the horticultural and agronomic fields.

Mr. Boicourt.

#### 640. PLANT BREEDING.

An advanced study of genetic topics peculiar to plants; the methods and problems of the plant breeder.

Prerequisite, Zool 240 or equivalent. Mr. Lachman.

#### 645. POST-HARVEST PHYSIOLOGY.

Physiological and biochemical processes occurring in fruits, vegetables, and flowers after harvest, and the effects of environmental modifications on these processes in maintaining quality and prolonging their useful life.

Mr. Bramlage.

#### 660. ECOLOGY AND CONTROL OF WEEDS.

Identification and ecology of common weeds and principles of weed control with emphasis on the use of chemical herbicides.

Mr. Vengris.



## PLANT PATHOLOGY

665. SOIL FORMATION AND CLASSIFICATION.  
The development of soils as related to physical, chemical, biological, climatic and geological factors. Locations of various soil classes in different continents are considered.

Credit, 4. Mr. M. Weeks.

665. SOIL FORMATION AND CLASSIFICATION.  
The development of soils as related to physical, chemical, biological, climatic, and geological factors.

Credit, 4. Mr. M. Weeks.

670. SOIL PHYSICS.

Physical properties of soils; water and pollutant retention and transport; soil, air, temperature, texture and structure; their measurements, evaluations, environmental implications and influence in the soil - water - plant continuum.

Prerequisites, introductory courses in physics, mathematics or chemistry, or permission of instructor. Mr. Stewart.

675. SOIL CHEMISTRY.

Soil chemical properties as related to chemical reactions of plant nutrients in soils.

Prerequisites. Chem 112 and Plant and Soil Sci 105 or equivalent. Mr. Baker.

680. SOIL FERTILITY.

Mineral nutrients in the growth of plants; the use of fertilizers and other soil amendments; soil reaction; mineral deficiencies and toxicities in plants. Mr. Drake.

## Plant Pathology

### GRADUATE FACULTY

RICHARD A. ROHDE, *Professor, Head of the Department of Plant Pathology, and Graduate Program Director*, A.B., Drew University, 1951; M.S., Maryland, 1956; Ph.D., 1958.

GEORGE N. AGRIOS, *Professor*, B.S., University of Thessaloniki, Greece, 1957; Ph.D., Iowa State, 1960.

WILLIAM A. FEDER, *Professor*, B.A., Johns Hopkins, 1941; Ph.D., California at Berkeley, 1950.

CONSTANTINE J. GILGUT, *Professor*, B.S., Massachusetts, 1931; M.S., 1934; M.A., Harvard, 1937; Ph.D., 1942.

FRANCIS W. HOLMES, *Professor*, B.A., Oberlin, 1950; Ph.D., Cornell, 1954.

WILLIAM J. MANNING, *Associate Professor*, B.S., Michigan State, 1963; M.S., Delaware, 1966; Ph.D., 1968.

MARK S. MOUNT, *Associate Professor*, B.S., Illinois Wesleyan, 1963; M.S., Michigan State, 1965; Ph.D., 1968.

WILLIAM N. RICE, *Associate Professor*, B.S., Sioux Falls College, 1936; M.S., Iowa State, 1939; Ph.D., 1944.

TERRY A. TATTAR, *Assistant Professor*, B.A., Northeastern, 1967; Ph.D., New Hampshire, 1971.

BERT M. ZUCKERMAN, *Professor*, B.S., North Carolina State, 1948; M.S., N.Y. State College of Forestry, 1949; Ph.D., Illinois, 1954.

Students accepted for graduate study towards the Master of Science or Doctor of Philosophy degree are expected to have fulfilled the usual requirements for a bachelor's degree in a related discipline. Requirements for the M.S. degree ordinarily include a thesis, but course work, including Plant Pathology 700, may be substituted with permission of the adviser and Graduate Studies Committee. Facilities at the Suburban

## GRADUATE SCHOOL

Experiment Station, Waltham, and the Cranberry Experiment Station, East Wareham, are available for projects in special areas. The department has no foreign-language requirement.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

700. SPECIAL PROBLEMS.

Selected research problems in plant pathology. Credit, 1-5.

790. SEMINAR.

Reports and discussion on the current literature and research in plant pathology; special reports by resident and visiting speakers.

One class hour.

Credit, 1 each semester.

800. MASTER'S THESIS.

Credit, 10.

804. FOREST PATHOLOGY.

Review and critical examination of the recent developments in the major problem areas in forest pathology. Format is informal group discussion.

Prerequisite, Plant Path 569.

Mr. Tattar.

805. ADVANCED PLANT PATHOLOGY — PARASITISM AND PATHOGENESIS.

The physiology of diseased plants. Emphasis on the biochemical and physiological changes induced in the host by plant pathogens. Laboratory consists of biochemical investigations of diseased plants.

Prerequisite, Plant Path 551.

Credit, 4. Mr. Mount.

806. ADVANCED PLANT PATHOLOGY — EPIPHYTOLOGY.

The interactions of host, parasite, and environment in the rise and decline of devastating epiphytotics. The mechanisms that govern disease disposition, disease-resistance, and immunity.

Prerequisites, Botany 531 and Plant Path 551.

900. DOCTORAL DISSERTATION.

Credit, 20.

#### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

551. PLANT PATHOLOGY.

The causes, nature and control of plant diseases. Diagnosis of plant diseases. Mechanisms, biochemistry and genetics of plant disease induction, development and control.

Prerequisite, a course in Botany.

Mr. Agrios.

569. FOREST AND SHADE TREE PATHOLOGY.

The causes, nature and control of tree diseases. Physiology and genetics of host-parasite-environment interaction in trees. Forest and shade tree disease management and principles of decay prevention in forest products. Mr. Tattar.

575. METHODS IN PLANT PATHOLOGY.

General techniques and specialized methods used in the investigation of plant diseases.

Prerequisite, one semester of Plant Pathology.

640. GENETICS OF PLANT-PATHOGEN INTERACTION.

Characterization of genetic factors which control plant disease reaction and virulence. The influence of environment on genetic stability of pathogens. Mutations, parasexuality, and plant population genetics in relation to disease development.

Prerequisite, Plant Path 251 or 551.

Mr. Mount.

661. PLANT VIROLOGY.

Plant virus structure, infection, synthesis, assay and purification. Symptomatology and physiology of virus infected plants.

## UNIVERSITY OF MASSACHUSETTS

Transmission, identification and control of plant viruses. Virus diseases of major plant groups. Prerequisite, Plant Path 251 or 551 or permission of instructor. Credit 4. Mr. Agrios.

### 678. NEMATOLOGY.

Anatomy, morphology, and classification of plant-parasitic and other soil-inhabiting nematodes. Parasitic relationships with plants and current control-measures stressed. Prerequisite, a year of biological science.

Credit, 4. Mr. Rohde.

## Political Science

### GRADUATE FACULTY

LEWIS C. MAINZER, *Professor and Acting Chairman of the Department of Political Science*, B.A., New York University, 1948; M.A., Chicago, 1950; Ph.D., 1956.

GERARD BRAUNTHAL, *Professor and Graduate Program Director*, B.A., Queens, 1947; M.A., Michigan, 1948; Ph.D., Columbia, 1953.

DEAN ALFANGE, JR., *Associate Professor and Acting Vice Chancellor for Academic Affairs and Provost*, B.A., Hamilton, 1950; M.A., Colorado, 1960; Ph.D., Cornell, 1967.

LUTHER A. ALLEN, *Professor*, B.A., Williams, 1941; M.A., State University of Iowa, 1942; Ph.D., Chicago, 1952.

DAVID A. BOOTH, *Professor*, B.S., London School of Economics, 1952; M.A., Virginia, 1953; Ph.D., 1957.

WILLIAM E. CONNOLLY, *Professor*, B.A., Michigan at Flint, 1960; M.A., 1962; Ph.D., 1965.

KENNETH M. DOLBEARE, *Professor*, B.A., Haverford, 1951; L.B., Brooklyn Law School, 1958; Ph.D., Columbia, 1965.

PATRICK EAGAN, *Assistant Professor*, B.S., Regis, 1952; M.A., Colorado State, 1955; Ph.D., California at Riverside, 1971.

ERIC EINHORN, *Associate Professor*, B.A., Pennsylvania, 1965; M.A., Harvard, 1968; Ph.D., 1972.

JEAN B. ELSHTAIN, *Assistant Professor*, B.A., Colorado State, 1963; M.A., University of Colorado, 1965; Ph.D., Brandeis, 1973.

MADGE ERTEL, *Lecturer*, B.A., Minnesota, 1953; M.A., Idaho, 1965; Ph.D., 1971.

EDWARD E. FEIT, *Professor*, B.A., Witwatersrand, 1944; M.A., University of South Africa, 1949; Ph.D., Michigan, 1965.

JOHN H. FENTON, *Commonwealth Professor of Government*, B.A., Kentucky, 1948; M.A., 1951; Ph.D., Harvard, 1956.

PETER J. FLIESS, *Professor*, B.A., Stanford, 1944; M.A., Harvard, 1947; Ph.D., 1951.

HARVEY L. FRIEDMAN, *Associate Professor and Director of the Labor Relations and Research Center*, J.D., Boston, 1947.

EDWIN ANDRUS GERE, JR., *Associate Professor*, B.A., Alfred, 1948; M.A., Pennsylvania State, 1956; Ph.D., New York at Albany, 1968.

SHELDON GOLDMAN, *Professor*, B.A., New York University, 1961; M.A., Harvard, 1964; Ph.D., 1965.

## POLITICAL SCIENCE

GLEN GORDON, *Professor*, B.A., New York University, 1952; M.A., Chicago, 1957; Ph.D., 1963.

FRANKLIN W. HOUN, *Professor*, B.A., National Chenchi University, 1946; M.A., Denver, 1950; Ph.D., Wisconsin, 1953.

IRVING HOWARDS, *Professor*, B.A., Wisconsin, 1953; M.A., 1955; Ph.D., 1957.

JEROME B. KING, *Professor*, B.A., Dartmouth, 1949; M.S., Stanford, 1954; Ph.D., 1955.

HARVEY KLINF, *Assistant Professor*, B.A., North Carolina, 1966; Ph.D., Texas, 1970.

FRED A. KRAMER, *Associate Professor*, B.A., Johns Hopkins, 1963; M.A., Rutgers, 1964; Ph.D., Syracuse, 1969.

JOHN W. LEDERLE, *Joseph B. Ely Professor*, B.A., Michigan, 1933; M.A., 1934; L.L.B., 1936; Ph.D., 1942.

GLINTER LEWY, *Professor*, B.S.S., City College of New York, 1951; M.A., Columbia, 1952; Ph.D., 1957.

JOHN M. MAKI, *Professor*, B.A., Washington, 1932; M.A., 1936; Ph.D., Harvard, 1948.

LEILA MFO, *Associate Professor*, B.A., American University at Cairo, 1947; M.A., Syracuse, 1949; Ph.D., Indiana, 1961.

JEROME M. MILEUR, *Associate Professor*, B.A., Southern Illinois, 1955; M.A., Illinois, 1958; Ph.D., Southern Illinois, 1971.

FELIX E. OPPENHEIM, *Professor of Political Science and of Philosophy*, Docteur-en-droit, Brussels, 1935; Ph.D., Princeton, 1942.

KARI W. RYAVEC, *Associate Professor*, B.A., Miami University, 1957; M.A., Columbia, 1962; Ph.D., 1968.

ROBERT ANTHONY SHANLEY, *Associate Professor*, B.A., Columbia, 1946; M.A., 1948; Ph.D., Georgetown, 1955.

GEORGE T. SULZNER, *Associate Professor*, B.A., Muskingum College, 1959; M.A., Michigan, 1961; Ph.D., 1967.

ANWAR H. SYED, *Professor*, B.A., University of the Punjab, 1946; M.A., 1951; M.A., Chicago, 1953; M.A., Pennsylvania, 1954; Ph.D., 1957.

HOWARD J. WIARDA, *Professor*, B.A., Michigan, 1961; M.A., Florida, 1962; Ph.D., 1965.

The Department of Political Science offers graduate work leading to the Master of Arts, Master of Public Administration, and Doctor of Philosophy degrees. Detailed information on requirements for degrees may be obtained from the Department of Political Science.

The Department's courses are grouped into 16 subfields in three major divisions. In some subfields there is a proseminar which prepares beginning students for the more specialized advanced seminars by acquainting them with the fundamental concepts, theories, modes of inquiry, and research findings. In all subfields there are tutorials and directed studies courses. The tutorial is basically a reading course, the content of which is arranged by agreement of one or more students and a professor. Generally a tutorial treats a topic of their mutual interest not covered by existing formal courses. The directed studies courses is a specialized advanced seminar which covers a topic not offered in regular seminar form; it is an in-depth study of a particular

## POLITICAL SCIENCE

aspect of a subfield, and varies with the interests of professors and students.

The Master of Public Administration program, though academic in content, is especially suited to those planning, or currently embarked upon, a career in the public service. It typically necessitates one year of course work. An internship or public service work experience is required.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY

##### 700. SPECIAL PROBLEMS.

##### 701 — 709. AMERICAN GOVERNMENT AND POLITICS.

##### 701. TUTORIAL IN AMERICAN GOVERNMENT AND POLITICS.

##### 702. DIRECTED STUDIES IN AMERICAN GOVERNMENT AND POLITICS.

##### 703. LEGISLATIVE BEHAVIOR.

Selected topics in American legislative systems, national and state; attention to major research techniques and recent theoretical developments.

##### 704. AMERICAN POLITICAL PARTY SYSTEMS.

The structure and activities of American parties and their impact on individual and group political behavior and on government and public policy. Focus on both national and state party systems. Mr. Fenton.

##### 705. PROSEMINAR IN AMERICAN GOVERNMENT AND POLITICS.

##### 710 — 719. COMPARATIVE POLITICS.

##### 710. PROSEMINAR IN COMPARATIVE POLITICS.

##### 711. TUTORIAL IN COMPARATIVE POLITICS.

##### 712. DIRECTED STUDIES IN COMPARATIVE POLITICS.

##### 713. COMPARATIVE POLITICAL PARTIES.

The ideology, structure, and dynamics of diverse types of political parties, party systems, and electoral systems; their interrelationships. Mr. Braunthal.

##### 714. MILITARY POLITICS.

Comparative study of contemporary problems in civilian-military relations. Mr. Feit.

##### 720 — 729. INTERNATIONAL RELATIONS.

##### 720. PROSEMINAR IN INTERNATIONAL RELATIONS.

##### 721. TUTORIAL IN INTERNATIONAL RELATIONS.

##### 722. DIRECTED STUDIES IN INTERNATIONAL RELATIONS.

##### 723. PROBLEMS OF INTERNATIONAL RELATIONS.

Analysis of major problems in international relations. Mr. Fliess.

##### 724. INTERNATIONAL LAW AND ORGANIZATION.

Analysis of major problems in international law and organization.

##### 725. THEORY OF INTERNATIONAL POLITICS.

Analysis and conceptualization of the forces and drives that condition politics among nations. Mr. Fliess.

## GRADUATE SCHOOL

##### 726. NATIONALISM.

Analysis of nationalism as a political ideology with emphasis on its role in emergent nations. Mr. Fliess.

##### 727. IMPERIALISM.

Analysis of imperialism as a recurrent phenomenon in international relations with emphasis on the relations between advanced and emergent nations. Mr. Fliess.

##### 730 — 739. PUBLIC ADMINISTRATION.

##### 730. PROSEMINAR IN PUBLIC ADMINISTRATION.

##### 731. TUTORIAL IN PUBLIC ADMINISTRATION.

##### 732. DIRECTED STUDIES IN PUBLIC ADMINISTRATION.

##### 733. PUBLIC ADMINISTRATION: ORGANIZATION.

Behavior within governmental bureaucracy, in terms of the interaction between the individual and organizational influences.

##### 734. PUBLIC ADMINISTRATION: RESPONSIBILITY.

The meaning and institutions of political responsibility of governmental bureaucracy. Mr. Mainzer.

##### 735. COMPARATIVE PUBLIC ADMINISTRATION.

Comparative analysis of the government administrative systems of the U.S., Britain, Canada, France, the U.S.S.R., and other selected countries. Mr. Kramer.

##### 736. PUBLIC BUDGETING AND SYSTEMATIC ANALYSIS.

The theory and techniques of budgeting and systematic analysis and the political processes that relate these techniques to decision-making within the governmental organization. Mr. Kramer.

##### 739. PUBLIC ADMINISTRATION INTERNSHIP REPORT.

An internship experience in government service, including a supervised written report and an oral examination. Normally takes nine months to a year.

##### 740-749. PUBLIC LAW.

##### 740. PROSEMINAR IN PUBLIC LAW.

##### 741. TUTORIAL IN PUBLIC LAW.

##### 742. DIRECTED STUDIES IN PUBLIC LAW.

##### 743. LAW AND THE POLITICAL PROCESS.

The interrelationships between law and politics, and the functions of law in organized societies. Mr. Alfange, Mr. Beth, Mr. Goldman.

##### 744. THEORIES OF LAW AND JUDICIAL BEHAVIOR.

The theories of law, jurisprudence, and for judicial behavior. Mr. Alfange, Mr. Beth, Mr. Goldman.

##### 750-759. STATE AND LOCAL POLITICS.

##### 750. PROSEMINAR IN STATE AND LOCAL POLITICS.

##### 751. TUTORIAL IN STATE AND LOCAL POLITICS.

##### 752. DIRECTED STUDY IN STATE AND LOCAL POLITICS.

##### 753. URBAN POLITICAL SYSTEMS.

Comparative analysis of relationships among socioeconomic, environmental, and political structures and processes, and public policy outcomes in cities. Research applications of contemporary concepts and theories. Mr. Booth, Mr. Howards.

##### 754. THEORY OF LOCAL GOVERNMENT.

Theories of local government; general uniformities in the governmental process. Mr. Booth, Mr. Howards.



## UNIVERSITY OF MASSACHUSETTS

### 760-769. POLITICAL THEORY.

#### 760. PROSEMINAR IN POLITICAL THEORY.

#### 761. TUTORIAL IN POLITICAL THEORY.

#### 762. DIRECTED STUDIES IN POLITICAL THEORY.

#### 763. RECENT POLITICAL THEORY.

Contemporary theories about the possibilities and limits of operationalism, behavioralism, and the decision-making approach in political science. Mr. Oppenheim.

#### 764. CHURCH AND STATE.

Relations between western and non-western religions and the state; analysis of the ideas and other forces underlying this relationship, especially since 1918. Mr. Lewy.

#### 765. THE INDIVIDUAL AND THE STATE.

The problem of political obligation in political theory and in its historical and social contexts; the medieval right of resistance, the social contract, anarchism, resistance to totalitarianism, non-violent resistance, conscientious objection to war. Mr. Lewy.

#### 766. PHILOSOPHICAL FOUNDATIONS OF POLITICAL SCIENCE.

Critical examination of the principal contemporary views concerning the methods of gaining knowledge of political phenomena. Mr. Connolly.

#### 767. EMPIRICAL RESEARCH IN POLITICAL BEHAVIOR.

Introduction to research techniques as applied to special problems in the field of political behavior. Emphasis on various approaches to the study of the individual voter, the American politician, interest groups and legislatures. Mr. Fenton.

#### 768. REVOLUTIONS AND REVOLUTIONARY MOVEMENTS.

The phenomenon of revolution in modern times; the theory and practice of revolution in Jacobinism, Marxism, anarchism, Leninism, syndicalism, fascism, Castroism. Mr. Lewy.

### 770-779. AREA STUDIES.

#### 771. TUTORIAL IN AREA STUDIES.

#### 772. DIRECTED STUDIES IN AREA STUDIES.

#### 773. POLITICS OF SOUTH ASIA.

Selected problems relating to government and politics of India, Pakistan, and Ceylon. Mr. Sved.

#### 774. POLITICS OF EAST ASIA.

Selected problems relating to the politics of China, Japan, and other Asian countries. Mr. Houn, Mr. Maki.

#### 776. AFRICAN POLITICS.

Selected contemporary problems in African government and politics. Mr. Feit.

#### 777. LATIN AMERICAN POLITICS.

Comparative study of Latin American politics and government. Mr. Kline, Mr. Wiarda.

#### 778. EUROPEAN POLITICS.

Selected political cultures and systems in Europe. Mr. Braunthal, Mr. King.

#### 779. POLITICS AND FOREIGN POLICIES OF THE MIDDLE EAST AND NORTH AFRICA.

The regional and international politics of the Middle East and North Africa, focusing on questions and problems that promote conflict or collaboration in the area. Miss Meo.

#### 800. MASTER'S THESIS.

Credit, 6.

#### 900. DOCTORAL DISSERTATION.

Credit, 10.

## POLITICAL SCIENCE

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS.

#### American National Government and Politics

#### 505. THE PRESIDENCY IN AMERICAN GOVERNMENT.

The growth of the executive in the United States government. Varying conceptions of the presidential office. Constitutional and political aspects of the office in legislation, administration, and conduct of foreign and military affairs. The president as party leader.

Mr. Gordon, Mr. Kramer, Mr. Sulzner.

#### 508. POLITICAL PARTIES AND ELECTIONS.

American political processes. Emphasis on parties, pressure groups and public opinion.

Mr. Fenton, Mr. Mileur, Mr. Shanley.

#### 603. AMERICAN POLITICAL THOUGHT.

The development of American political thought from Colonial times to the present. Mr. Gere, Mr. King, Mr. Sved.

#### 605. THE LEGISLATIVE PROCESS.

The role of the legislature in national and state government. The functions of legislatures; legislative procedures; the role of political parties and pressure groups in the legislative process. Mr. Gordon, Mr. Sulzner.

#### 607. BLACK POLITICS.

Theoretical and historical analysis of the relationship of Black people to the American political system. The development of Black ideologies, political organizations, and strategies, and alternative forms of participation in the American political system.

#### 608. PUBLIC OPINION IN POLITICS.

Opinion and communication as aspects of the political process. Emphasis on communication through mass media. The relations between mass attitudes and communication and political institutions and the formation of public policy.

Mr. Fenton.

#### State and Local Government and Politics

#### 514. MUNICIPAL GOVERNMENT.

Survey of the structure and function of government in American municipalities.

Mr. Booth, Mr. Gere, Mr. Howards, Mr. Shanley.

#### 516. COMPARATIVE LOCAL GOVERNMENT.

The formal institutions and patterns of political behavior in cities of the world. Common urban problems, community participation, decision-making. Mr. Howards.

#### 517. MASSACHUSETTS POLITICS.

Analysis of the significant characteristics of Massachusetts politics as applied to political problems from an historical perspective with both a theoretical and practical base. Field work, readings, lectures, and discussions. Mr. Friedman.

#### 519. STATE GOVERNMENT.

American state politics, organization, and functions. Emphasis on the role of the state in our federal system.

Mr. Booth, Mr. Gere, Mr. Howards, Mr. Shanley.

#### 611. AMERICAN FEDERALISM.

An examination of the American system of federalism as it has developed and changed from the early days of the Republic to the present time, with emphasis on the shift from a legal to a programmatic orientation and an emerging complex of intergovernmental relations.

Mr. Gere, Mr. Eagan.

#### 614. METROPOLITAN POLITICS.

Problems of metropolitan areas; actual and possible political approaches to their solution. Emphasis on the role of parties.

## POLITICAL SCIENCE

the development of political leadership, existing political institutions, and pressure group activity.  
Prerequisite, Pol Sci 508 or permission of instructor.

Mr. Booth, Mr. Howards, Mr. Shanley.

### Public Administration and Policy Studies

#### 523. PUBLIC ADMINISTRATION.

Organization of bureaucracy, bureaucratic life, constitutional position, and political role of governmental bureaucracy.

Mr. Kramer, Mr. Lederle, Mr. Mainzer.

#### 526. POLITICAL THEORY, IDEOLOGY, AND PUBLIC POLICY.

The evaluation of social policy; a consideration of normative issues raised in controversies concerning social and economic policy in the light of main traditions of Western political thought and the logical and ethical aspects of social choice.

Mr. Eagan.

#### 620. GOVERNMENT OF BUREAUCRACIES.

Inquiry into the meaning and possibility of "democracy" within large-scale organizations. Mr. Kramer, Mr. Mainzer.

#### 623. PUBLIC PERSONNEL ADMINISTRATION.

The personnel function in bureaucracy; patronage and merit; career service and political executives; authority and informal organization; employee rights and collective action.

Mr. Kramer, Mr. Lederle, Mr. Mainzer.

#### 624. ADMINISTRATIVE LAW.

Governmental activities in the regulation of industry, agriculture, and labor. Emphasis on the legal framework within which these activities operate.

Mr. Lederle.

#### 626. AMERICAN PUBLIC POLICY.

In-depth study of selected areas of American policy. May include theory of, and approaches to, the study of public policy.

#### 627. COMPARATIVE PUBLIC POLICY.

A comparative analysis of policy formation; the process of social and economic policy decision-making in selected industrial societies; the interaction of institutions, ideas, and power in decisions concerning social welfare, economic planning, and related policy areas.

Mr. Einhorn.

### Comparative Government and Area Studies

#### 531. POLITICAL DEVELOPMENT AND MODERNIZATION.

Comparative analysis of political change and development in the emerging nations.

Mr. Coulter, Mr. Kramer,  
Mr. Maki, Mr. Syed, Mr. Wiarda.

#### 533. GOVERNMENT AND POLITICS OF THE MIDDLE EAST.

A review of the dynamics of the traditional Islamic political system and of the transformation of that system under the impact of Western penetration of the Middle East. Contemporary Middle East politics with special reference to the politics of Israel, Syria, Lebanon and the UAR.

Miss Meo.

#### 535. EAST CENTRAL EUROPE.

Survey of the major governments in the East Central European area with emphasis on the nature of Communist Party control. Governments of Czechoslovakia, East Germany, Hungary, Poland, Rumania, Yugoslavia, and others.

Mr. Ryavec, Mr. Vali.

#### 538. GOVERNMENT AND POLITICS OF SOUTH AND SOUTHEAST ASIA.

Comparative study of the institutions and dynamics of government and politics in South and Southeast Asia, especially India, Pakistan, Indonesia, and Malaysia, with reference to issues of political stability, economic development, and relations with the U.S. and other great powers.

Mr. Allen, Mr. Syed.

## GRADUATE SCHOOL

#### 539. WEST EUROPEAN COMPARATIVE POLITICS.

Analysis of the political cultures, institutions, systems, and processes of selected West European countries. Emphasis on social and economic factors relating to contemporary political issues.

Mr. Braunthal, Mr. Einhorn, Mr. King.

#### 540. GOVERNMENT AND POLITICS OF SOUTH AMERICA.

Comparative analysis of the interest groups, political parties, and government institutions of the South American countries. Emphasis on the background and political culture in which Latin American politics and government takes place.

Mr. Kline, Mr. Wiarda.

#### 541. GOVERNMENT AND POLITICS OF CENTRAL AMERICA AND THE CARIBBEAN.

Comparative analysis of the interest groups, political parties, and government institutions of the Central American and Caribbean countries. Emphasis on communism and the role of the U.S.

Mr. Kline, Mr. Wiarda.

#### 542. THE POLITICS OF SUB-SAHARAN AFRICA.

The organization and processes of African politics, centering on the general political problems facing contemporary African governments.

Mr. Feit.

#### 543. COMPARATIVE AFRICAN GOVERNMENTS.

Comparative study of the political process in five African states.

Mr. Feit.

#### 548. GREAT BRITAIN AND THE COMMONWEALTH.

The practice of parliamentary government in Great Britain and the Commonwealth countries. Emphasis on development of the conception of the Commonwealth, the institutions through which the Commonwealth operates, and its contemporary world politics.

#### 634. GOVERNMENT AND POLITICS OF JAPAN.

Government and politics of modern Japan with emphasis on the post-1945 period; descriptive analysis of structure and function of government and political process.

Mr. Maki.

#### 636. GOVERNMENT AND POLITICS OF THE SOVIET UNION.

Historical and ideological influences on Soviet politics; the interconnection of social and political institutions and processes; membership, organization, and operation of the Communist Party; the state structure and law; and contemporary Soviet foreign policy.

Prerequisite, Pol Sci 131, or History 100-101, or permission of instructor.

Mr. Ryavec, Mr. Vali.

#### 637. GOVERNMENT AND POLITICS OF CHINA.

An analysis of the genesis and dynamics of the Chinese Communist movement, the ideology and organization of the party and the government, and major domestic and foreign policies since 1949, with special reference to the Maoist attempt to reform man and society as well as to achieve modernization.

Mr. Houn.

#### 640. POLITICS IN THE IBERIAN PENINSULA: THE POLITICAL SYSTEMS OF SPAIN AND PORTUGAL.

The unique aspects of the process of political development and/or decay in Spain and Portugal. Emphasis on the heritage of these two nations as reflected in their New World colonies in the Americas and on the present-day pattern of politics in the Iberian peninsula.

Prerequisites, Pol Sci 131 or permission of instructor.

Mr. Wiarda.

#### 647. ARMED FORCES AND POLITICAL POLICY.

Comparative study of civilian-military relations in the Western and non-Western nations, concentrating both on regular and irregular armed forces.

Mr. Feit.

### International Relations

#### 555. AMERICAN FOREIGN POLICY.

Constitutional, political, and administrative considerations

## UNIVERSITY OF MASSACHUSETTS

which influence the formulation and execution of American foreign policy. Emphasis on current issues. Mr. Allen.

### 558. INTER-AMERICAN RELATIONS.

Analysis of the effects of the United States — government, business, labor and other groups — on the internal politics and economics of the Latin-American countries.

Mr. Kline, Mr. Wiarda.

### 650. SOVIET FOREIGN POLICY.

An analysis of community and change in Soviet perceptions, goals, methods, and priorities in foreign policy. Emphasis on the period since World War II.

Mr. Ryavec.

### 651. CHINESE FOREIGN POLICY.

Examination of the geographical, historical, ideological, economic, military, and other factors in Peking's foreign policy since 1949. Emphasis on mainland China's relations with various countries and her positions on major international issues.

Mr. Houn.

### 656. INTERNATIONAL LAW.

The origin, character, and function of international law.

Mr. Fliess.

### 657. INTERNATIONAL ORGANIZATION.

International organization in the 20th century. Emphasis on the United Nations and regional organization.

### 658. INTERNATIONAL RELATIONS: ASIA.

Introduction to general problems of Asian international relations since 1859, with detailed examination of problems since World War I. Emphasis on China, Japan, and the new nations.

Mr. Houn, Mr. Maki.

### 659. WESTER EUROPEAN FOREIGN POLICIES.

Analysis of the emerging institutional patterns of the West European communities. Emphasis on the major political, military, and economic regional organizations and their relations with Communist nations and the United States.

Mr. Braunthal, Mr. Einhorn.

## Public Law and Judicial Process

### 560. CONSTITUTIONAL LAW.

The United States Supreme Court and leading cases interpreting the United States Constitution.

Mr. Alfange, Mr. Beth, Mr. Goldman.

### 561. CIVIL LIBERTIES.

The development in American Constitutional law of the concept of civil liberty, including the fields of free speech and religion, fair trial, and race discrimination. The function of courts in safeguarding these liberties.

Mr. Alfange, Mr. Beth, Mr. Goldman.

### 662. POLITICS, LAW AND JUDICIAL BEHAVIOR.

American court systems including examination of the processing of cases, judicial backgrounds and selection, judicial decisional behavior, some major court policies and the responses to them from groups and institutions with the larger political system.

Mr. Alfange, Mr. Beth, Mr. Goldman.

## Political Theory and Methodology

### 570. ANCIENT AND MEDIEVAL POLITICAL THOUGHT.

Development of political thought and its relation to cultural and institutional growth from the time of the Greeks to the end of the Middle Ages.

Mr. Connolly, Ms. Elshain, Mr. King, Mr. Lewy, Mr. Oppenheim.

### 571. MODERN POLITICAL THOUGHT.

Development of political thought and its relation to cultural and institutional growth from the rise of the modern state to the present.

Mr. Connolly, Ms. Elshain, Mr. King, Mr. Lewy, Mr. Oppenheim, Mr. Syed.

## POLYMER SCIENCE AND ENGINEERING

### 574. PROBLEMS IN POLITICAL THOUGHT.

Some basic problems of political science, political ethics, and political philosophy through study of selected classical and modern political thinkers.

Mr. Connolly, Ms. Elshain, Mr. Mileur, Mr. Oppenheim.

### 673. HUMAN NATURE AND POLITICS.

The role of the individual in the political process and especially with the problem of political perception, the way in which symbols structure reality, and the use of symbols to maintain stability or effect change in the political system.

Mr. Connolly, Mr. Feit.

### 678. COMMUNIST POLITICAL THOUGHT.

The philosophic and religious origins of Soviet Communism in Western and Eastern Europe. Analysis of the classics from Marx to Khrushchev.

Mr. Fliess.

## Polymer Science and Engineering

### GRADUATE FACULTY

ROGER S. PORTER, *Professor and Head of the Department of Polymer Science and Engineering*, B.S., University of California at Los Angeles, 1950; Ph.D., University of Washington, Seattle, 1956.

OTTO VOGL, *Professor and Graduate Program Director*, Ph.D., University of Vienna, 1950.

JAMES C. W. CHIEN, *Professor of Chemistry*.

RICHARD J. FARRIS, *Adjunct Associate Professor and Associate Professor of Civil Engineering*.

ALLEN S. HAY, *Adjunct Professor*, B.S., Lehigh, 1962; Ph.D., Polytechnic Institute of Brooklyn, 1966.

FRANK E. KARASZ, *Professor*, B.S., Imperial College, University of London, 1954; Ph.D., University of Washington, 1957.

ROBERT L. LAURENCE, *Professor of Chemical Engineering*.

ROBERT W. LENZ, *Professor of Chemical Engineering*.

WILLIAM J. MACKNIGHT, *Professor of Chemistry*.

STANLEY MIDDLEMAN, *Professor of Chemical Engineering*.

EDWARD P. OTOCKA, *Adjunct Professor*, B.Sc., Alberta, 1950; M.Sc., 1952; Ph.D., Illinois, 1955.

ISAAC SANCHEZ, *Associate Professor*, B.S., St. Mary's University, 1963; Ph.D., Delaware, 1969.

RICHARD S. STEIN, *Commonwealth Professor of Chemistry and Director of the Polymer Research Institute*.

## THE DOCTOR OF PHILOSOPHY DEGREE PROGRAM

### Admission Requirements:

1. A B.S. or B.A. in chemistry, engineering, or physics.
2. Undergraduate work in two of the following areas:
  - a. Organic chemistry.
  - b. Physical chemistry.
  - c. Thermodynamics.
  - d. Unit operations.
  - e. Mechanics of materials.



## POLYMER SCIENCE AND ENGINEERING

### *Suggested Program:*

1. Undergraduate courses in areas under 2, above.
2. Core and basic requirements as follows:

|                                                       | <i>Credits</i> |
|-------------------------------------------------------|----------------|
| 501. INTRODUCTION TO POLYMER SCIENCE.                 | 3              |
| 502. POLYMER SCIENCE LAB.                             | 3              |
| 503. POLYMER SYNTHESIS LAB.                           | 3              |
| 790. ORGANIC POLYMERIZATION REACTIONS.                | 3              |
| 748-9. PHYSICAL CHEMISTRY OF HIGH POLYMERS.           | 3              |
| 792. RHEOLOGY.                                        | 3              |
| 793. POLYMER PROCESSING.                              | 3              |
| 720 — 769. POLYMER SCIENCE AND ENGINEERING ELECTIVES. | 2-3            |
| 780 — 3. POLYMER SCIENCE AND ENGINEERING SEMINAR.     | 1 ea.          |
| 786 — 7. RESEARCH PROPOSAL.                           | 1 ea.          |

Also, course electives (10-20 credits), a language and comprehensive examinations as approved by Polymer Science and Engineering and as required by the Graduate School.

|                    |     |
|--------------------|-----|
| 900. DISSERTATION. | 18. |
|--------------------|-----|

### THE MASTER OF SCIENCE DEGREE PROGRAM

Requirements for admission are the same as those for entry into Ph.D. Program.

### *Suggested Programs*

With thesis:

|                                                       | <i>Credits</i> |
|-------------------------------------------------------|----------------|
| 501. INTRODUCTION TO POLYMER SCIENCE.                 | 3              |
| 502. POLYMER SCIENCE LAB.                             | 3              |
| 790. ORGANIC POLYMERIZATION REACTIONS.                | 3              |
| 791. PHYSICAL CHEMISTRY OF HIGH POLYMERS.             | 3              |
| 792. RHEOLOGY.                                        | 3              |
| 720 — 769. POLYMER SCIENCE AND ENGINEERING ELECTIVES. | 2-3 ea.        |
| 780 — 3. POLYMER SCIENCE AND ENGINEERING SEMINAR.     | 1 ea.          |
| 800. MASTER'S THESIS.                                 | 10             |

Without thesis:

|                                           | <i>Credits</i> |
|-------------------------------------------|----------------|
| 501. INTRODUCTION TO POLYMER SCIENCE.     | 3              |
| 502. POLYMER SCIENCE LABORATORY.          | 3              |
| 790. ORGANIC POLYMERIZATION REACTIONS.    | 3              |
| 791. PHYSICAL CHEMISTRY OF HIGH POLYMERS. | 3              |
| 792. RHEOLOGY.                            | 3              |

## GRADUATE SCHOOL

|                                                       |         |
|-------------------------------------------------------|---------|
| 720 — 769. POLYMER SCIENCE AND ENGINEERING ELECTIVES. | 2-3 ea. |
|-------------------------------------------------------|---------|

|                                |     |
|--------------------------------|-----|
| 770. INTRODUCTION TO RESEARCH. | 1-3 |
|--------------------------------|-----|

|                                                   |       |
|---------------------------------------------------|-------|
| 780 — 3. POLYMER SCIENCE AND ENGINEERING SEMINAR. | 1 ea. |
|---------------------------------------------------|-------|

Also, course electives selected from suggested list for the Ph.D. program (brochure available from the Department upon request). Both the master's and doctor's programs in Polymer Science and Engineering are interdisciplinary in nature and are designed to provide a broad and fundamental education in polymers. Entering students will normally have a bachelor's or master's degree in chemistry, engineering, or physics. Flexibility in the first year's curriculum allows for basic work in fields other than the student's undergraduate major and for prerequisites for advanced work in the PSE program. There is a basic core of courses within the PSE program, with sufficient electives to provide options for students with either a chemistry-physics emphasis or an engineering emphasis. An intermediate-level reading knowledge of one foreign language for all doctoral candidates. The language test is administered by the PSE Department.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

COURSES OPEN TO GRADUATE STUDENTS ONLY  
(For either major or minor credit)

### 721. MICROSCOPY AND MORPHOLOGY OF POLYMERS.

The use of the light and electron microscope. Phase contrast, interference methods, selected area diffraction, scattering techniques, and replication and decoration methods for the study and characterization of the morphology of polymeric structures.

Two class hours, four laboratory hours per week.  
Prerequisites, PSE 501, general physics, optics desirable.  
Mr. Price.

770. INTRODUCTION TO RESEARCH.  
Independent student research on a specific project in polymer science or engineering, selected to teach research methods and techniques and to acquire new knowledge.  
Requirement, approval of the department head. *Credit, 1-3.*

780 — 783. POLYMER SCIENCE AND ENGINEERING SEMINAR.  
Students, staff members, and visitors present seminars dealing with current research and literature reviews in polymer science and engineering and in related areas of materials science.  
About two seminar hours per week. *Credit, 1 each semester.*

786-787. RESEARCH PROPOSAL.  
Students write and defend a proposal for an experimental investigation of a research problem not directly related to their thesis topic. The project selected requires approval of the thesis committee, and involves primarily library research.  
*Credit, 1 each semester.*

790. ORGANIC POLYMERIZATION REACTIONS.  
Mechanisms, kinetics, and thermodynamics of principal types of polymerization reactions. Also Chem 797.  
Prerequisites, PSE 501; Chem 571 or equivalent. Mr. Vogl.

798-799. PHYSICAL CHEMISTRY OF HIGH POLYMERS.  
Structure of solid polymers, determination of molecular weights, sizes and shapes, mechanical properties of solid polymers, colligative properties of polymer solutions, polyelectrolytes, and physical chemistry of proteins.  
Prerequisite, Chem 785 or equivalent.

*Credit, 3 each semester.*  
Mr. Karasy, Mr. Sanchez, Mr. Stein.

## UNIVERSITY OF MASSACHUSETTS

### 792. RHEOLOGY.

Definition and measurement of rheological properties; continuum mechanics and constitutive equations; molecular theories of polymer deformation; correlation and interrelation of material functions. Relation of the various approaches taken in describing the viscous and viscoelastic properties of polymers, evaluation of these approaches; the role of modern rheology in the characterization and processing of polymers.

Mr. Middleman, Mr. Porter.

### 793. POLYMER PROCESSING.

Application of principles of chemical engineering to analysis of polymer processes such as extrusion, roll coating, mixing, etc. Applied fluid dynamics; some attention to heat and mass transfer.

Prerequisite, PSE 792.

Mr. Middleman, Mr. Porter.

### 800. MASTER'S THESIS.

Credit, 6-10.

### 900. DOCTORAL DISSERTATION

Credit, 18.

### COURSE OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

(For either major or minor credit)

#### 501. INTRODUCTION TO POLYMER SCIENCE.

Physical and organic chemistry of polymers for persons with basic training in chemistry, physics, or engineering. A survey of preparative methods of polymers, means of preparation of polymers of controlled structure, the physical chemistry of polymer molecules in solution, liquid and solid phases, thermodynamics and statistics of polymers, methods of characterization, mechanical properties of polymeric solids and fundamentals of industrial preparative and fabrication techniques. Prerequisite, one year of physical chemistry and one semester of organic chemistry and permission of instructor.

#### 502. POLYMER SCIENCE LABORATORY

Characterization of polymers by physical and physicochemical methods including colligation and rheological determination.

Laboratory and one lecture hour/week. Technical report required.

Mr. Chien, Mr. Price.

#### 503. POLYMER SYNTHESIS LABORATORY

Experiments performed to prepare and characterize the most important types of polymers. Radical, cationic, anionic polymerizations, copolymerizations, chain transfer in polymerizations as well as some typical processes for the preparation of polymers and the direct preparation of finished articles by monomer casting.

Laboratory open one day a week, oral presentation of results.

Mr. Vogl

### RELATED COURSES

#### Ch E 670. APPLIED POLYMER SCIENCE.

#### Biochem 728. PROTEIN PHYSICAL CHEMISTRY

#### MAE 650. X-RAY DIFFRACTION.

#### MAE 709. MECHANICAL PROPERTIES OF MATERIALS.

#### MAE 881. SELECTED TOPICS IN MATERIALS.

#### Ch E 711. FLUID MECHANICS.

#### Ch E 712. HEAT TRANSFER.

## Psychology

### GRADUATE FACULTY

BONNIE STRICKLAND, *Professor and Chairman of the Department of Psychology*, B.S., Alabama College, 1955; M.A., Ohio State, 1960; Ph.D., 1962.

## PSYCHOLOGY

JAMES R. AVERILL, *Professor and Associate Chairman of the Department of Psychology*, B.A., San Jose State College, 1959, Ph.D., California at Los Angeles, 1966.

ALICE H. EAGLY, *Professor and Graduate Program Director*, B.A., Radcliffe, 1960, M.A., Michigan, 1963, Ph.D., 1965.

ICEK AJZEN, *Associate Professor*, B.A., Hebrew University of Jerusalem, 1967; M.A., Illinois, 1967; Ph.D., 1969.

DANIEL ANDERSON, *Professor*, B.S., Wisconsin, 1966, M.A., Brown, 1966; Ph.D., 1970.

DEE G. APPLEY, *Professor*, B.A., University of Denver, 1945; M.A., University of Michigan, 1949; Ph.D., 1952.

MICHAEL A. ARBIB, *Professor of Computer and Information Science and Psychology*.

JOHN J. B. AYRES, *Associate Professor*, B.A., William and Mary, 1961; M.A., University of Kentucky, 1963; Ph.D., 1965.

SEYMOUR M. BERGER, *Professor*, B.A., Oklahoma A and M College, 1949; M.A., Columbia, 1950; Ph.D., Cornell University, 1959.

RICHARD S. BOGARTZ, *Professor*, B.A., California at Los Angeles, 1957; Ph.D., 1961.

NEIL CARLSON, *Associate Professor*, B.A., Illinois, 1964, M.A., 1966; Ph.D., 1966.

SHELDON CASHDAN, *Associate Professor*, B.S., City College of New York, 1958; M.A., University of North Carolina, 1963; Ph.D., 1965.

JAMES I. CHUMBLEY, *Associate Professor*, B.A., Drake, 1960; M.S., Indiana University, 1963; Ph.D., 1967.

CHARLES E. CLIFTON, *Professor*, B.A., Stanford 1960; Ph.D., Minnesota, 1964.

RACHEL K. CLIFTON, *Professor*, B.A., Berea, 1959, M.A., Minnesota, 1960, Ph.D., 1963.

MARVIN DAEHLER, *Associate Professor*, B.A., Illinois, 1964, M.A., Minnesota, 1966, Ph.D., 1965.

JOHN W. DONAHOE, *Professor*, B.A., University of Kentucky, 1954; M.S., 1956; Ph.D., 1958.

WILLIAM J. DUFFY, *Associate Professor of Industrial Engineering and Psychology*.

ERNEST DZENDOLET, *Professor*, B.S., California Institute of Technology, 1951; M.S., Brown, 1957; Ph.D., 1959.

WILLIAM EICHELMAN, *Assistant Professor*, B.A., Hartford, 1965; M.S., Oregon, 1968; Ph.D., 1970.

SEYMOUR EPSTEIN, *Professor*, B.A., Brooklyn College, 1945; M.A., Wisconsin, 1951, Ph.D., 1953.

KATHERINE V. FITE, *Associate Professor*, B.S., Florida State, 1963; M.S., Brown, 1967, Ph.D., 1969.

MARK I. FRIEDMAN, *Visiting Assistant Professor*, B.S., Maryland, 1965, Ph.D., Princeton, 1973.

HOWARD GADLIN, *Associate Professor*, B.A., Queens College, 1962; Ph.D., Michigan, 1966.

STUART GOLANN, *Professor*, B.A., Queens College, 1957; M.A., North Carolina, 1959; Ph.D., 1961.

## PSYCHOLOGY

RICHARD GOLD, *Associate Professor*, B.A., Middlebury, 1957; Ph.D., Chicago, 1966.

RONALD K. HAMBLETON, *Assistant Professor of Education and Psychology*.

MORTON G. HARMATZ, *Professor*, B.A., Ohio State, 1960; M.A., Washington, 1962; Ph.D., 1963.

HAROLD JARMON, *Professor*, B.A., New York, 1955; M.A., Kansas, 1959; Ph.D., 1962.

C. DALTON JONES, *Assistant Professor*, B.A., Rutgers, 1962; M.S., Tufts, 1965; Ph.D., Cornell, 1973.

ALAN C. KAMIL, *Associate Professor*, B.A., Hofstra, 1963; M.S., Wisconsin, 1966; Ph.D., 1967.

ALEXANDRA KAPLAN, *Associate Professor*, B.A., Michigan, 1963; Ph.D., Columbia, 1968.

SOLIS L. KATES, *Professor*, B.S., City College of New York, 1935; M.S., 1937; Ph.D., Columbia, 1948.

GEORGE LEVINGER, *Professor*, B.A., Columbia, 1946; M.A., California at Berkeley, 1951; Ph.D., Michigan, 1955.

ALAN LIEBERMAN, *Assistant Professor*, B.S., Brooklyn College, 1953; M.A., Connecticut, 1955; Ph.D., 1960.

RICHARD T. LOUITT, *Professor*, B.A., DePaul, 1954; M.A., Michigan, 1959; Ph.D., 1961.

VONNIE C. MCLOYD, *Assistant Professor*, B.A., Talladega College, M.A., 1971; Michigan, 1973; Ph.D., 1975.

JOHN W. MOORE, *Professor*, B.A., Lawrence, 1958; Ph.D., Indiana, 1962.

STANLEY M. MOSS, *Professor*, B.A., Ohio State, 1957; M.A., 1958; Ph.D., 1962.

JEROME L. MYERS, *Professor*, B.A., Syracuse, 1953; M.A., Wisconsin, 1955; Ph.D., 1957.

NANCY A. MYERS, *Professor*, B.A., Mount Holyoke, 1952; M.A., Wisconsin, 1954; Ph.D., 1957.

BERNADETTE NELSON-SHAPIRO, *Assistant Professor*, B.A., Stanford, 1967; M.A., 1969; Ph.D., 1973.

MELINDA NOVAK, *Assistant Professor*, B.A., Connecticut, 1967; M.A., Wisconsin, 1971; Ph.D., 1973.

ALEXANDER POLLATSEK, *Associate Professor*, B.S., Michigan, 1961; M.A., Harvard, 1963; M.S., Michigan, 1964; M.A., 1965; Ph.D., 1969.

HAROLD RAUSH, *Professor*, B.A., Michigan, 1941; M.A., 1942; Ph.D., Stanford, 1950.

MIRIAM G.K. ROGERS, *Visiting Lecturer*, B.A., McGill, 1965; M.A., Oregon, 1972; Ph.D., 1974.

JAMES M. ROYER, *Assistant Professor*, B.A., Chico State, 1967; M.A., Illinois, 1969; Ph.D., 1970.

HARRY SCHUMER, *Associate Professor*, B.S., Ohio State, 1954; M.A., 1956; Ph.D., 1961.

NORMAN SIMONSON, *Assistant Professor*, B.A., Rochester, 1960; Ph.D., Pennsylvania State, 1968.

J. ALFRED SOUTHWORTH, *Professor*, B.S., U.S. Naval Academy, 1943; M.A., Harvard, 1955; Ph.D., 1956.

## GRADUATE SCHOOL

D. N. SPINELLI, *Professor of Computer and Information Science and Psychology*.

ERVIN STAUB, *Professor*, B.A., Minnesota, 1962; Ph.D., Stanford, 1965.

IVAN STEINER, *Professor*, B.A., Central Michigan, 1941; M.A., Michigan, 1948; Ph.D., 1952.

BETH SULZER-AZAROFF, *Professor*, B.S., City College of New York, 1950; M.A., 1953; Ph.D., Minnesota, 1966.

HARIHARAN SWAMINATHAN, *Assistant Professor of Education and Psychology*.

DAVID M. TODD, *Associate Professor*, B.A., Alma, 1965; Ph.D., Michigan, 1971.

GILBERT C. TOLHURST, *Professor of Communication Disorders and Psychology*.

BARBARA F. TURNER, *Associate Professor of Human Development and Psychology*.

CASTELLANO B. TURNER, *Associate Professor*, B.A., DePaul, 1957; M.A., 1963; Chicago, 1966.

GEORGE N. WADE, *Assistant Professor*, B.S., Pennsylvania State, 1967; Ph.D., California at Berkeley, 1970.

NORMAN WATT, *Professor*, B.A., Northwestern, 1957; M.A., Ohio State, 1960; Ph.D., 1962.

ARNOLD WELL, *Associate Professor*, B.S., McGill, 1961; M.S., Alberta, 1963; M.A., Oregon, 1966; Ph.D., 1969.

PATRICIA A. WISOCKI, *Assistant Professor*, B.A., Marygrove, 1965; Boston College, 1967; Ph.D., 1971.

The aim of the Graduate Program in Psychology is to train scientists who will pursue careers in the following general areas: Biopsychology (including animal and comparative, physiological, and sensory), Cognitive Processes, Clinical\* (including behavior modification, community mental health, and family therapy), Developmental, Education (a joint program with the School of Education), Personality, and Social. Students may develop programs of study which cut across these established areas, e.g., between Biopsychology and Cognitive Processes, with the approval of the Graduate Program Director.

The aim of the program is implemented by a variety of course offerings. All students are requested to take, directly or by examination, some course outside their primary area of study in order to gain breadth of knowledge in psychology. These "core" courses are complemented by specialized offerings, including field experience where applicable. A strong emphasis is placed on research, first with faculty, and then on individual student research which culminates in the doctoral dissertation. In addition, because a large percentage of our Ph.D.'s pursue their careers in an academic setting, all students are encouraged to participate in one teaching practicum. Qualified students may also be allowed to assume complete responsibility for small independent sections of larger courses. The "core" consists of six courses: Two in statistics, one in Systematic Psychology (which may be waived for students hav-



## UNIVERSITY OF MASSACHUSETTS

ing received a grade of A or B in an undergraduate course in history or psychology), and three outside one's area of specialization.

All students are admitted to work toward the Ph.D. degree. However, the Master of Science degree is ordinarily earned after completion of 30 credits of study, including a Master's thesis. The M.S. is usually attained in two years, and the Ph.D. in four, except for the Ph.D. in Clinical Psychology for which an additional year's internship is required. Students may complete these requirements in less time.

There is no University nor department-wide foreign language requirement for the student's program of study and research. Similarly, the satisfactory completion of a basic course in Computer Science, or some other technical course, may be required for the Ph.D. degree. Such a course is usually completed early in the student's program of study so that it can serve subsequently as a research tool.

For admission, applicants should have 18 credits or semester hours of psychology courses beyond an introductory course. Included in these courses should be one in statistics, and one in experimental psychology. The latter may be a laboratory course in either physiological, sensory, emotion and motivation, or learning and thinking. Applicants who have done outstanding work in other areas of study, but do not have the required undergraduate credits in psychology, are urged to apply for admission to graduate work. They may be asked to make up some credits or courses. After satisfactory completion of a semester's work of advanced undergraduate courses, such students may petition the Department to waive any remaining undergraduate deficiencies.

In addition to the other Graduate School admission requirements, applicants should also submit to the Department the results of the Miller Analogies Test.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

##### 700. PROBLEM IN PSYCHOLOGY.

A research project which may be taken in lieu of the master's thesis or by doctoral students as minor research.

*Credit, 3 each semester; maximum credit 12.*

##### 706. DEVELOPMENTAL PSYCHOLOGY.

Selected issues, both historical and contemporary, in developmental psychology.

##### 711. SENSORY PROCESSES I.

Auditory, cutaneous senses, and labyrinthine senses; the fundamental data with their implications concerning functioning of these systems.

Prerequisites, Psych 210 or 6 credits of advanced psychology or equivalent.

##### 712. SENSORY PROCESSES II.

Visual, gustatory, and olfactory sense; the fundamental data with their implications concerning functioning of these systems.

Prerequisites, Psych 210 or 6 credits of advanced psychology or equivalent.

##### 715. PERCEPTION.

Primarily vision and audition. Stress on perceptual process, as opposed to sensory processes. The perception of form, space, depth; perceptual development and learning, etc.

Prerequisite, Psych 510 or equivalent.

## PSYCHOLOGY

##### 720. LEARNING.

Basic phenomena and current research in animal and human learning.

##### 721. CONDITIONING.

The basic laws of classical conditioning. Topics include the physiological bases of conditioning to more complex behavior, and relevant research techniques for animal and human experimentation. Lectures and laboratories.

##### 723. ANIMAL LEARNING.

The implication of the basic laws of learning for explaining complex aspects of animal learning. Examples or topics may include application of classical conditioning models to instrumental situations, aversive control, discrimination learning, and private learning.

##### 725. HUMAN INFORMATION PROCESSING I.

Basic processes in human cognition and performance. Topics include attention, judgment, choice, short term memory, and long-term memory.

Prerequisite, Psych 720 or permission of instructor.

##### 726. HUMAN INFORMATION PROCESSING II.

Complex aspects of human cognition and performance. Topics include sequential behavior, concept formation, thinking, and psycholinguistics.

Prerequisite, Psych 725 or permission of instructor.

##### 731. EMOTION AND MOTIVATION

The nature, determinants, and interrelationships of emotion and motivation; techniques involved in investigating these phenomena. Lectures and laboratories.

##### 735. SYSTEMATIC PSYCHOLOGY.

The general structure of psychological theory and an historical and comparative consideration of the backgrounds, viewpoints on scientific methodology, research interests and techniques, and the component variables, hypotheses, and laws of structural, Gestalt, functional, and behavioristic movements.

##### 741. CORRELATIONAL TECHNIQUES

Reasoning and assumptions underlying correlation analyses; inference; introduction to multivariate techniques; partial correlation; multiple correlation and regression, introduction to factor analysis.

Prerequisite, Psych 545, previously or concurrently, or permission of instructor.

##### 742. PSYCHOLOGICAL SCALING.

Theories underlying measurement and scaling in psychology and the social sciences; models of judgment and choice; models of psychological similarity; models of attitudes and abilities; a comparison of unidimensional multidimensional approaches.

Prerequisite, Psych 545, previously or concurrently, or permission of instructor.

##### 744. FACTOR ANALYSIS.

Theory and methods of factor analysis in psychological research. Literature and laboratory exercises.

Prerequisite, Psych 741 or equivalent.

##### 745. ADVANCED APPLIED STATISTICS.

Various experimental designs, the assumptions underlying their use, and the appropriate statistical analysis; orthogonal and randomized designs, trend analysis, nonparametric techniques, and multivariate analysis.

Prerequisite, Psych 545 or equivalent.

##### 746. QUANTITATIVE METHODS IN PSYCHOLOGY.

Mathematical descriptions of psychophysical and time-dependent data; parameter estimation; stochastic processes.

Prerequisites, Psych 545 and Math 123 or equivalent.

##### 750. PHYSIOLOGICAL PSYCHOLOGY.

An intensive overview of the field. Topics include an introduction to neuroanatomy, techniques used in investigations of brain function, the physiological bases of emotion, motivation, reward and punishment, species-typical behavior, learning, and memory.

## PSYCHOLOGY

## GRADUATE SCHOOL

**751. ADVANCED PHYSIOLOGICAL PSYCHOLOGY.**  
In-depth analysis of modern concepts in the study of the physiological and biochemical bases of behavior.  
Prerequisite, permission of instructor.

**752. THE NEUROANATOMICAL BASIS OF BEHAVIOR.**  
Structure and function of the mammalian nervous system as they relate to sensory-motor and motivational systems.  
Prerequisite, Psych 550 or equivalent, or permission of instructor.

**753. PSYCHOPHARMACOLOGY.**  
The neurochemical mechanisms of drugs that affect mood and behavior.  
Prerequisite, Psych 550, 552, or equivalent.

**760. THEORIES OF CHILD DEVELOPMENT.**  
The more relevant theories of child development, specifically those which have served as the impetus for experimental research with children. Theoretical analysis of the personality; social and cognitive development of children.

**762. LEARNING AND MEMORY PROCESSES IN CHILDREN.**  
Theoretical and experimental approaches to topics in learning and memory.  
Two class hours, one 2-hour laboratory period.  
Prerequisite, Psych 721 or 262 or permission of instructor.

**763. COGNITIVE PROCESSES IN CHILDREN.**  
Piagetian, behavioristic, and information-processing approaches to research in conceptual development.  
Two class hours, one 2-hour laboratory period.  
Prerequisite, Psych 721 or 262 or permission of instructor.

**764. PERCEPTUAL DEVELOPMENT IN CHILDREN.**  
An introduction to theories of perceptual development, consideration of sensory and perceptual capacities of the infant, and analysis of developmental changes in perception in the infant and older children.

**766. PERSONALITY AND SOCIAL DEVELOPMENT IN CHILDREN.**  
Review and analysis of the literature on personality development and the socialization process in children.  
Prerequisites, Psych 262, 270, or equivalent.

**775. THE PSYCHOLOGY OF EXCEPTIONAL CHILDREN.**  
The etiology, diagnosis, and treatment of exceptional children, with emphasis on intellectual, social, physical, and sensory deviation.  
Prerequisites, Psych 262, 235, or permission of instructor.

**777. DIAGNOSIS AND TREATMENT OF BEHAVIOR DISORDERS IN CHILDREN.**  
The diagnosis and treatment of psychological maladjustments in infancy and childhood; treatment procedures, resources, and methods used in dealing with behavior and personality problems. Lectures, discussions, practicum sessions.  
Prerequisites, Psych 325, 262 or 762, and 833.

**780. ADVANCED SOCIAL PSYCHOLOGY.**  
An overview of theory and experimental research in social psychology. Topics include social perception, attitude structure and change, dyadic interaction, and group processes.

**781. ATTITUDES.**  
Theory, method, and data concerned with the nature and structure of attitudes and opinions, the formation of attitudes, attitude change in response to communication and interpersonal influence.  
Prerequisite, Psych 780.

**782. SOCIAL JUDGMENT AND INTERPERSONAL PERCEPTION.**  
The influence of culture, values, needs, and attitudes on per-

ceptual judgments; judgmental and inferential processes about persons and interpersonal behavior.  
Prerequisites, Psych 780 and 710, or permission of instructor.

**783. SOCIAL LEARNING.**  
Concentration on theories of social learning, particularly those concerned with the analysis of the effectiveness of social reinforcement and observational learning.  
Prerequisite, Psych 720 or equivalent.

**784. GROUP DYNAMICS.**  
Interpersonal and group processes; attraction, influence, group structure, communication, cooperation, leadership, group performance. Focus on theory, experimentation, and special problems of the field.  
Prerequisite, Psych 780.

**793. ADVANCED EDUCATIONAL PSYCHOLOGY.**  
The psychological principles and concepts of development learning as related to educative process and their application to teaching. Primarily intended for graduate students in Education.  
Prerequisite, Psych 301 or equivalent, or permission of instructor.

**794. SOCIAL PSYCHOLOGY IN THE SCHOOLS.**  
Review and analysis of the social psychological literature as it pertains to school and educational issues. Emphasis on social interaction in the classroom.  
Prerequisite, Psych 280 or equivalent, or permission of instructor.

**795. PSYCHOLOGY OF CLASSROOM LEARNING.**  
Review and analysis of the findings of psychology that pertain to instruction. Emphasis on the practical control of learning activities especially as seen in the classroom.  
Prerequisite, Psych 280 or equivalent, or permission of instructor.

**821. PERSONALITY.**  
The basic concepts and principles in the study of personality, including theoretical research issues. Emphasis on recent research in specific areas of personality.

**830. CLINICAL I.**  
Roles and functions of clinicians in various settings, current professional issues. Introduction to assessment as related to alternative view of abnormality and personality. Lecture and laboratory. *Credit, 6.*

**831. CLINICAL II.**  
Psychological evaluation with emphasis on interviewing and testing procedures. Involves both seminar and practicum; most appropriate for students in clinical psychology. Lecture and laboratory.  
Prerequisite, Psych 830. *Credit, 6.*

**833. CLINICAL III.**  
Problem-formulating and problem-solving within various clinical situations and clinical models. Integration and communication of findings from psychological assessment. Lecture and laboratory.  
Prerequisite, permission of instructor. *Credit, 6.*

**834. OBJECTIVE PERSONALITY INTEREST, AND APTITUDE ASSESSMENT.**  
Review and analysis of the psychological literature pertaining to structured personality, interest, and aptitude tests.  
Two class hours, one 2-hour laboratory period.

**835. CLINICAL IV.**  
The theory of the individual techniques of psychotherapy and demonstration of these techniques through video and other tapes, and role-playing.  
Three lecture hours, two laboratory hours.  
Prerequisite, Psych 833. *Credit, 4.*

**836. CLINICAL V.**  
Theoretical and research approaches to group and family

## UNIVERSITY OF MASSACHUSETTS

therapies. Laboratory provides practicum experiences in these techniques.  
Three lecture hours and three hours of laboratory.  
Prerequisite, Psych 835. *Credit, 4.*

**840. SEMINAR IN CLINICAL PRACTICE.**  
A topic concerned with the practice of clinical psychology.

**841. SEMINAR IN PERSONALITY.**  
A topic concerned with the area of personality.

**842. SEMINAR IN CLINICAL RESEARCH.**  
A topic concerned with research in clinical psychology.

**843. SEMINAR IN CLINICAL SPECIALTY.**  
A topic concerned with a specialty area within clinical psychology.

**852. SEMINAR IN COGNITIVE PROCESSES.**  
Advanced consideration of selected topics in human cognition and performance. Topics chosen from attention, judgment, choice, memory, sequential behavior, concept formation, and psycholinguistics.  
May be repeated for credit. *Credit, 1-9.*

**853. SEMINAR IN QUANTITATIVE THEORIES OF BEHAVIOR.**  
Examination and evaluation of quantitative theories of selected behavioral phenomena. Topics selected from choice, detection and recognition, judgment, memory, learning, and concept-formation.  
Prerequisite, Psych 746 or permission of instructor. May be repeated for credit. *Credit, 1-9.*

**860. BASIC CONCEPTS IN COUNSELING PSYCHOLOGY.**  
Introductory review and analysis of the psychological literature related to the practice, research, and training functions in counseling psychology.  
Prerequisite, 18 credits of psychology or permission of instructor.

**865. COUNSELING THEORIES AND TECHNIQUES.**  
Detailed consideration of current theories and techniques employed in counseling psychology.  
Prerequisites, Psych 270, 311, or permission of instructor.

**866. THE PSYCHOLOGY OF VOCATIONAL DEVELOPMENT.**  
Review and analysis of the psychological literature concerning the psychological basis for vocational choice.  
Prerequisite, Psych 834 or equivalent.

**868. GROUP COUNSELING AND PSYCHOTHERAPY.**  
Review and analysis of the psychological literature in conjunction with experience in multiple counseling and therapeutic processes.  
Two class hours, one 2-hour laboratory period.  
Prerequisite, Psych 835 or 865 or equivalent.

**871 (I), 872 (II). PRACTICUM**  
Practice in the application of psychological techniques to clinical settings and counseling; and practice in teaching in any area of psychology. Either semester may be elected independently.  
Taught with the staffs of cooperating institutions and agencies. *Credit, 3-12.*

**873 (I), 874 (II). TEACHING PRACTICUM IN PSYCHOLOGY.**  
Required of all doctoral candidates. Experience in procedures, leading discussion groups and teaching labs. Close supervision by faculty members. Students meet once a week to discuss problems in teaching. *Credit, 3-12.*

**881. TOPICAL SEMINAR IN LEARNING PSYCHOLOGY**  
A critical analysis of advanced topics in the field of learning; emphasis on the current periodical literature.

## PSYCHOLOGY

Prerequisite, one graduate course in learning or permission of instructor.  
*Credit, 3 each semester; maximum credit, 12.*

**882. TOPICAL SEMINAR IN PSYCHOLOGICAL PSYCHOLOGY.**  
A critical analysis of advanced topics in the field of psychological psychology; emphasis on the current periodical literature.  
Prerequisite, one graduate course in psychological psychology or permission of instructor.  
*Credit, 3 each semester; maximum credit, 12.*

**883. TOPICAL SEMINAR IN SENSORY PSYCHOLOGY**  
A critical analysis of advanced topics in the field of sensory psychology; emphasis on the current periodical literature.  
Prerequisite, one graduate course in physiological psychology or permission of instructor.  
*Credit, 3 each semester; maximum credit, 12.*

**891 (I), 892 (II). SEMINAR.**  
Selected topics of current significance in psychology. Research studies analyzed and theoretical advanced explored. Either semester may be elected independently. Both may be taken only with a change in topic.  
Prerequisite, permission of instructor.  
*Credit, 3 each semester; maximum credit, 9.*

**895 (I), 896 (II). RESEARCH METHODOLOGY.**  
Study and evaluation of research methods and of problems in the major fields of psychology. *Credit, 3 each semester.*

**800. MASTER'S THESIS.** *Credit, 8-10.*

**900. DOCTORAL DISSERTATION.** *Credit, 10.*

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

**542. ADVANCED EXPERIMENTAL PSYCHOLOGY**  
A presentation and critical evaluation of laboratory techniques and experimental methods used in psychology.  
Prerequisite, one undergraduate course in experimental psychology or permission of instructor.  
*Credit, 3 each semester; maximum credit, 9*  
Offered spring semester  
Prerequisites, Psych 101, 141.  
May be repeated for maximum of 6 credits.

**545. STATISTICAL INFERENCE IN PSYCHOLOGY**  
Application of statistical procedures to analysis of psychological data and to problems of measurement in psychology and related fields.  
Two class hours, one 2-hour laboratory period.  
Offered fall semester.  
Prerequisites, Psych 101; Psych 145 or Stat 121

**550. PHYSIOLOGICAL PSYCHOLOGY.**  
Neural bases of behavior, current issues in physiological psychology; psychobiological investigations of learning, sensory processes, motivation, and instinctive behavior  
Prerequisites, Psych 101 and Zool 101 or permission of instructor.

**551. LABORATORY IN PHYSIOLOGICAL PSYCHOLOGY.**  
Development of skills in laboratory techniques used in physiological psychology, including animal neurosurgery, electrophysiological stimulation and recording, and assessment of drug-behavior interactions.  
Two 2-hour laboratory periods.  
Prerequisites, Psych 141 and Psych 250. *Credit, 2.*

**552. DRUGS AND BEHAVIOR.**  
The psychobiological foundations of drug-behavior interactions. Topics: Ultrastructure and chemistry of the nervous system, basic pharmacology, and mechanisms of action of drugs that affect mood and behavior.  
Prerequisite, Psych 250 or permission of instructor.



## PSYCHOLOGY

### 563. PSYCHOLOGY OF ADOLESCENCE.

The development and emotional, social, and intellectual adjustment of the individual during the adolescent years.  
Prerequisite, Psych 101.

### 572. LABORATORY IN PSYCHOPHYSIOLOGY.

The recording and analysis of physiological data from intact human subjects; emphasis on variables mediated by the autonomic nervous system (e.g., electrodermal and cardiovascular activity) One class hour, one 2-hour laboratory period, independent projects.  
Prerequisites: Some knowledge of basic physiology and electronics is strongly recommended.

### 588. INDUSTRIAL PSYCHOLOGY.

Psychological principles underlying personnel selection and training, communication, and decision-making in industry. Offered fall semester.  
Prerequisite, Psych 101.

### 589. ORGANIZATIONAL PSYCHOLOGY.

Introduction to the psychology of organizational participation. Personal adaptation and organizational processes in a wide variety of organizational settings.  
Offered spring semester.

### 606 (1). COMPARATIVE PSYCHOLOGY.

Emphasis on experimental investigations in a wide range of species. Topics include sensory and physiological systems, learning, and early experience.  
Offered fall semester.  
Prerequisite, permission of instructor.

### 611. PSYCHOLOGICAL TESTS.

Survey of tests of intelligence, aptitude, interest, personality, and adjustment. Test rationale, construction, characteristics, uses, and evaluation emphasized.  
Two class hours, one 2-hour laboratory period.  
Offered spring semester.  
Prerequisite, Psych 101.

### 645. INTRODUCTION TO QUANTITATIVE THEORIES OF BEHAVIOR.

Introduction to quantification of theories of learning, retention, choice, perception, and the interaction of individuals in group situations.  
Offered spring semester.  
Prerequisite, Psych 145, 305, or permission of instructor.

## COURSES NOT FOR MAJOR CREDIT

(No graduate credit for students majoring in psychology)

### 510. SENSATION AND PERCEPTION.

Methods, data, and theories of the functioning of various sensory systems. Topics include a survey of basic sensory processes in the cutaneous sense, audition, vision, gustation, and olfaction, and higher perceptual process in selected senses.  
Prerequisite, Psych 101.

### 511. LABORATORY IN SENSATION AND PERCEPTION.

Selected laboratory exercises in audition and vision and a semester project chosen by the student, with the aid of the instructor, in some area of sensation or perception.  
Two 2-hour laboratory periods.  
Prerequisites, Psych 141 and 210.

Credit, 2.

### 520. LEARNING AND THINKING.

A general survey of animal and human learning and performance. Topics include factors affecting acquisition, generalization, discrimination, extinction, and transfer in animals and humans; memory; and higher cognitive processes in humans.  
Prerequisite, Psych 101.

### 521. LABORATORY IN HUMAN LEARNING.

Introduction to methods used in investigating rote verbal learning, concept formation, short-term retention, verbal

conditioning, artificial language, learning, motor-skills, and other phenomena in human learning and retention.

Two 2-hour laboratory periods.

Prerequisites, Psych 141 and 220.

Credit, 2.

### 522. LABORATORY IN ANIMAL LEARNING.

Introduction to methods used in investigating classical conditioning and operant behavior primarily using laboratory animals as subjects. Topics include: acquisition, generalization, discrimination, extinction, and transfer phenomena.  
Two 2-hour laboratory periods.

Prerequisites, Psych 141 and 220.

Credit, 2.

### 530. EMOTION AND MOTIVATION.

Introduction to theories and research on the nature and determinants of motivation. Topics include instinct, behavior energization concepts, biological and acquired bases of emotions and motives, frustration, conflict, and stress.  
Prerequisite, Psych 101.

### 531. LABORATORY IN MOTIVATION.

Methods of investigating motivation, including both laboratory and field studies using human and animal subjects. Includes individual and small group projects.

Two 2-hour laboratory periods.

Prerequisites, Psych 141, 230.

Credit, 2.

### 560. CHILD BEHAVIOR AND DEVELOPMENT.

Psychological development of the child, including theories, methods, and data of child-behavior studies.  
Prerequisite, Psych 101.

### 561. LABORATORY IN CHILD BEHAVIOR AND DEVELOPMENT.

Selected experiments investigating perceptual, conceptual, learning, and social processes in children.

Two 2-hour laboratory periods.

Prerequisites, Psych 141 and 260.

Credit, 2.

### 562. CHILD PSYCHOLOGY.

Psychological development of the child, including language emotions, intelligence, social behavior, motivation and personality.

Not open to psychology majors.

Prerequisite, Psych 101.

### 565. INTRODUCTION TO THE STUDY OF EXCEPTIONAL CHILDREN.

The etiology, diagnosis, characteristics, education, and prognosis of deviations in mental, physical, and socio-emotional development.

Prerequisites, Psych 101, 262, or permission of instructor.

### 570. PERSONALITY.

Introduction to the scientific study of personality. Personality development, structure, and dynamics from major theoretical orientations.

Prerequisite, Psych 101.

### 571. EXPERIMENTAL STUDY OF PERSONALITY.

Review and evaluation of research approaches to the study of personality. Data, theories, and methods of investigation. Selected projects.

Two 2-hour laboratory periods.

Prerequisites, Psych 141 and 270.

Credit, 2.

### 580. SOCIAL PSYCHOLOGY.

Introduction to the principles and study of social behavior. The psychological factors involved in attitude formation and change, communication and persuasion, and small group processes.

Prerequisite, Psych 101.

### 581. LABORATORY IN ATTITUDES AND OPINIONS.

Methods and research concerning attitude formation and change, attitude and opinion measurement, communication and persuasion.

Two 2-hour laboratory periods.

Prerequisites, Psych 141 and 280, or permission of instructor.

Credit, 2.

## UNIVERSITY OF MASSACHUSETTS

### 582. LABORATORY IN GROUP BEHAVIOR.

Methods and research concerning the behavior of individuals in groups. Interpersonal attraction, social interaction and influence, power and conflict, communication, group structure, leadership, and productivity.

Two 2-hour laboratory periods.

Prerequisites, Psych 141 and 280, or permission of instructor.  
*Credit, 2.*

### 601. EDUCATIONAL PSYCHOLOGY.

Psychological facts and principles of development, learning, and measurement as applied to educational situations.

Two class hours, one 2-hour laboratory period.

Prerequisite, Psych 101.

### 605. HISTORICAL AND CONTEMPORARY SYSTEMS.

General structure of psychological theory; analysis and comparison of historical systems in the tradition of British empiricism-associationism and Continental rationalism, and of derivative near-contemporary and contemporary mentalistic, functionalistic, and behavioristic systems.

Prerequisite, Psych 101.

### 625. ABNORMAL PSYCHOLOGY.

Etiology, symptoms, and therapy of behavior abnormalities including neuroses, psychoses, epilepsies, speech disorders, and mental deficiency.

Prerequisite, Psych 101.

### 631. CLINICAL PSYCHOLOGY.

Introduction of the theoretical approach and methods used in understanding and treating the psychologically-disturbed individual.

Two class hours, one 2-hour laboratory period.

Prerequisite, Psych 325 or permission of instructor.

### 665. THEORIES AND PRACTICE IN COUNSELING.

Theories, techniques, and tests necessary in counseling and guidance. Practice in organization and evaluating relevant data in the analysis of illustrative cases.

Two class hours, one 2-hour laboratory period.

Offered spring semester.

Prerequisites, Psych 270 or 311 or permission of instructor.

### 675. MENTAL RETARDATION.

Introduction to mental retardation. Topics include psychological, sociological, educational, bio-medical, and legal considerations.

Prerequisites, Psych 101 and permission of instructor.

## RELATED COURSES

### *Computer and Information Science*

#### 603. FUNDAMENTALS OF CYBERNETICS

#### 683. ARTIFICIAL INTELLIGENCE.

#### 782. COMPUTATIONAL CYBERNETICS.

#### 784. PATTERN RECOGNITION

### *Education*

#### 516. EVALUATION MODELS.

#### 705. SEMINAR-APPLIED MULTIVARIATE ANALYSIS.

#### 705. SEMINAR-PSYCHOMETRIC MODELS.

#### 705. SEMINAR-EVALUATION DESIGN

#### 731. FACTOR ANALYSIS.

#### 735. TEST THEORY.

#### 820. RESEARCH PRACTICUM IN EDUCATION.

## PUBLIC HEALTH

### *Entomology*

#### 595. EVOLUTION

#### 611. INSECT BEHAVIOR.

### *Sociology*

#### 725. SYMBOLIC INTERACTION SEMINAR.

#### 729. SOCIOLOGY OF SMALL GROUPS.

#### 784. ADVANCED SOCIOLOGICAL THEORY.

#### 785. COMPLEX ORGANIZATIONS.

#### 797. SURVEY DESIGN AND ANALYSIS

### *Communication Studies*

#### 792. THEORIES OF HEARING.

### *Zoology*

#### 540. PRINCIPLES OF GENETICS

#### 600. VERTEBRATE ZOOLOGY

#### 650. ANIMAL BEHAVIOR

#### 670. COMPARATIVE PHYSIOLOGY.

#### 680. DEVELOPMENTAL BIOLOGY.

#### 750. SELECTED TOPICS IN ANIMAL BEHAVIOR.

#### 755. SYSTEMATICS AND EVOLUTIONARY MECHANISMS.

#### 770. COMPARATIVE NEUROPHYSIOLOGY.

#### 780. PHYSIOLOGICAL REGULATORY MECHANISMS

#### 784. ENDOCRINOLOGY.

## Public Health

## GRADUATE FACULTY

WILLIAM A. DARITY, *Professor, Dean of the School of Health Sciences, Director of the the Division of Public Health, and Graduate Program Director*, B.S., Shaw University, 1948; M.S.P.H., North Carolina Central, 1949; Ph.D., North Carolina at Chapel Hill, 1964.

TYZZ-LANG CHEN, *Assistant Professor*, B.Ed., National Taiwan University, 1962; M.A., University of Maryland, 1966; Ph.D., Ohio State, 1970; M.P.H., California at Berkeley, 1971.

SALVATORE DINARDI, *Associate Professor*, B.A., Hofstra 1965; Ph.D., Massachusetts, 1971.

ROBERT W. GAGE, *Professor and Vice Chancellor for Student Affairs*, B.S., Massachusetts, 1939; M.D., Harvard, 1942.

DAVID W. HOSMER, *Assistant Professor*, B.A., Vermont, 1966; M.A., 1968; Ph.D., Washington, 1971.

## PUBLIC HEALTH

STANLEY LEMESHOW, *Assistant Professor*, B.B.A., City University of New York, 1969; M.P.H., North Carolina at Chapel Hill, 1970; Ph.D., California at Los Angeles, 1976.

WARREN LITSKY, *Commonwealth Professor of Environmental Sciences and Public Health*, B.A., Clark 1945; M.S., Massachusetts, 1948; Ph.D., Michigan State, 1951.

GARY S. MOORE, *Assistant Professor*, B.S., Massachusetts, 1966; M.S., 1969; Dr.P.H., North Carolina at Chapel Hill, 1971.

A. TAHER MOUSTAFA, *Associate Professor*, M.D., Cairo University, 1954; M.P.H., University of Alexandria, 1959; Dr.P.H., California at Berkeley, 1962.

JESSE W. ORTIZ, *Associate Professor*, B.Ph., Northwestern, 1961; M.S., Loyola, 1965; M.P.H., Michigan, 1968; Dr.P.H., 1970.

HOWARD A. PETERS, *Associate Professor*, B.A., University of Omaha, 1951; M.P.H., North Carolina at Chapel Hill, 1958; Ph.D., 1965.

JEROME S. PETERSON, *Adjunct Professor*, B.S., Syracuse, 1925; M.D., College of Physicians and Surgeons, Columbia, 1931; M.P.H., Harvard School of Public Health, 1939.

RICHARD B. REYNOLDS, *Associate Professor*, B.A., Colorado, 1958; M.P.H., California at Berkeley, 1967; Dr.P.H., 1973.

PAULA STAMPS, *Assistant Professor*, B.S., Missouri, 1968; M.S., Oklahoma, 1970, Ph.D., 1972.

BRUCE C. STUART, *Associate Professor*, B.A., Whitman, 1965; M.A., Washington State, 1968; Ph.D., 1970.

IRA D. TRAIL, *Professor of Nursing and Public Health*, R.N., Bellevue Hospital, 1947, B.S. Hunter, 1950; M.A., Columbia, 1960, Dr. P.H., California at Los Angeles, 1971.

ROBERT W. TUTHILL, *Associate Professor*, B.A., Massachusetts, 1956; M.A., Pennsylvania, 1961; Ph.D., North Carolina at Chapel Hill, 1970.

## COURSE OF STUDY

Students interested in obtaining graduate preparation in the various areas of public health will be accepted in the Division of Public Health if their previous academic background indicates an aptitude for graduate study. Applicants must satisfy the entrance requirements of the Graduate School. Usually applicants will be best prepared by having completed an undergraduate major in either the physical sciences, biological sciences, public health, or the social and behavioral sciences. For all students a minimum background is essential in both the social and behavioral sciences and the biological sciences. In special circumstances, students will be accepted with other undergraduate study majors.

The course of study is organized to prepare students for concentration in:

1. Biostatistics and/or health statistics.
2. Community health education.
3. Environmental health.
4. Epidemiology.
5. Health administration.
6. Health laboratory science.

The course of study leads to the Master of Science degree. Students will also be prepared for advanced graduate studies. The Division encourages an interdisciplinary academic and research approach and will arrange a cooperative program with other departments when this is in the interest of the student. Students who have completed undergraduate study in public health or have followed courses similar or parallel to the Public Health 500-600 series will not be permitted to take such courses for graduate credit.

Also, students who have deficiencies in certain specific, essential, undergraduate courses will be required to take such courses without graduate credit.

Each applicant's situation is evaluated and handled on an individual basis.

Examples of typical programs of study in each of the areas of concentration are available.

Interested persons may secure this information by writing to the Division.

## RESEARCH

All graduate students in the Division of Public Health must carry out some form of investigation or research as a requirement for the Master of Science degree. This will be in the form of a thesis conducted under the direction of a departmental faculty member who is also a member of the Graduate Faculty. Before receiving the Master of Science degree, all students must pass an oral comprehensive examination. This examination is given by at least three members of the Graduate Faculty. The comprehensive examination covers the research project as well as the subject matter the student will have covered leading up to the Master of Science degree.

## COURSES REQUIRED OF ALL STUDENTS FOR MASTER OF SCIENCE DEGREE

The following courses, with some minor adjustments, are required of all Public Health majors:

## PUBLIC HEALTH

|                                                                                                                                                                                                                                                                                 | Credits    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| PH 620. Introduction to Health Administration.                                                                                                                                                                                                                                  | 4          |
| PH 660. Principles of Environmental Health.                                                                                                                                                                                                                                     | 3          |
| PH 630. Principles of Epidemiology.                                                                                                                                                                                                                                             | 3          |
| PH 640. Public Health Statistics.                                                                                                                                                                                                                                               | 3          |
| PH 740. Evaluation of Public Health Research.                                                                                                                                                                                                                                   | 3          |
| PH 795 and 796. Seminar.                                                                                                                                                                                                                                                        | 1 ea. sem. |
| PH 800. Masters Thesis.                                                                                                                                                                                                                                                         | 6-10       |
| Courses to fulfill requirements for concentration in the area of public health elected by the student (biostatistics and/or health statistics, health administration, community health education, environmental health, epidemiology or health laboratory science) are selected |            |



## UNIVERSITY OF MASSACHUSETTS

in cooperation with the faculty adviser. The total program and the topic for investigation or research must have the approval of the Division's Graduate Coordination Committee. Two academic years is the normal period required for satisfying requirements for the Master of Science degree in the Division of Public Health.

### MASTER OF ARTS IN TEACHING (MAT) PROGRAM IN PUBLIC HEALTH

The Master of Arts in Teaching degree (MAT) is offered in cooperation with the Graduate School to candidates who are interested in health education teaching at the elementary and secondary school level and the community college level.

The program for the secondary level requires 40 graduate credits, distributed as follows: Education courses, nine credits, Education practicum, nine credits. At least 12 credits in Public Health, to include at least two courses and two seminars. The remaining credits (at least 10) will be taken in the Division of Public Health or must be courses approved by the Division of Public Health.

For the community-college level option, 45 graduate credits are required, distributed as follows: 24 credits in the field of Public Health, 12 credits in professional Education courses, and nine credits for teaching practicum.

*Prerequisites for admission:* For all candidates, a bachelor's degree in an appropriate discipline or equivalency.

For Medical Technology candidates, the MT (ASCP) certification and at least one year's experience on a professional level, or its equivalency. Applicants interested in the MAT in public health should be sure to indicate this on their application.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY

##### 700. SPECIAL PROBLEMS IN PUBLIC HEALTH.

Special investigational or research problems for advanced students. The scope of the work can be varied to meet specified conditions. *Credit, 3-6.*

##### 702. ADVANCED METHODS IN HEALTH EDUCATION.

Health education efforts that have influenced community health. Individual study, programming and research methods.

*Prerequisite, permission of instructor.* Mr. Chen.

##### 708. RESEARCH METHODS IN COMMUNITY HEALTH EDUCATION.

Logic and techniques of research methods as applied to health education. Formulations, research problems, developing research designs, collecting, analyzing and reporting data as they relate to the solution of community health problems.

*Prerequisite, permission of instructor.* Mr. Chen, Ms. Stamps.

##### 720. ORGANIZATION AND MANAGEMENT OF MEDICAL CARE.

Organizational patterns for delivery of medical care. Cost, methods of payment, health personnel and facilities, planning, evaluation of medical care-health, amendments to the Social Security Act, national and international trends.

*Prerequisite, permission of instructor.* Mr. Moustafa.

##### 730. EPIDEMIOLOGICAL INVESTIGATION

Examination of vital statistics and their use in epidemiologi-

cal investigations. Students formulate and carry out an epidemiological analysis using secondary data.

*Prerequisite, PH 630.*

##### 734. HEALTH PROGRAM EVALUATION.

Approaches to evaluating categorical health programs. Class undertakes a systematic analysis of previous evaluation efforts in health areas of individual interest.

*Prerequisite, permission of instructor.* Mr. Tuthill

##### 735. SOCIAL EPIDEMIOLOGY

Life styles of populations and the risks to which individuals in these populations are vulnerable. Models linking social stress, physiological responses, psychosocial mediators, and social support systems which promote or reduce susceptibility to disease.

*Prerequisite, permission of instructor.* Mr. Tuthill.

##### 737. ADVANCED EPIDEMIOLOGY.

The application of epidemiological techniques to the study of a specific health problem.

*Prerequisite, PH 730.*

##### 740. EVALUATION OF PUBLIC HEALTH RESEARCH

Principles of statistics applied to the evaluation of public health research.

Mr. Gross

##### 741. SURVIVAL THEORY IN PUBLIC HEALTH AND SCIENCE

Application of statistical distribution theory to assess and predict survival in human beings and animals who are, for example, exposed to a radiation hazard, as well as electrical and mechanical equipments.

*Prerequisites, PH 640 and Math 616 or permission of instructor.* Mr. Gross

##### 742. ADVANCED METHODS IN BIOMETRIC RESEARCH

Applications of advanced statistical procedures such as Hotellings'  $T^2$  statistic, nonlinear regression, and stepwise linear regression to problems in biology, medicine and public health.

*Prerequisites, PH 640, Math 616, and FORTRAN programming ability, or permission of instructor.* Mr. Gross

##### 760. ENVIRONMENTAL HEALTH PLANNING.

Principles of environmental health as translated into community programs planned to meet desirable objectives. Different surveys and rating systems as measuring devices for the effectiveness of programs.

*Prerequisite, PH 660 or equivalent.* Mr. Peters

##### 761. TOPICS IN RADIATION PROTECTION.

Details of man's radiation environment, including the impact of nuclear power generation radioisotope releases, medical radiation, and applications of radiation processing of materials and foods.

*Prerequisite, permission of instructor of PH 663.*

##### 773. AIR SAMPLING AND ANALYSIS

Applications of fluid mechanics and gas laws to measurement and collection of atmospheric pollutants which are injurious to health. These pollutants are analyzed by various chemical techniques.

*Prerequisite, PH 662 or permission of instructor.* Mr. DiNardi.

##### 780. PUBLIC HEALTH LAW

Constitutional and social bases for public health law. The development of statutes and regulations and their effects on social problems, including review of court decisions and the preparation of administrative regulations.

Mr. Hartzer

##### 782. SUPERVISED FIELD TRAINING (INTERNSHIP).

For majors. Opportunity for supervised field observation and professional experience in selected public health agencies. Assignment in either associate function or internship.

Departmental staff; consultants in public health agencies.

*Credit, 3-12.*

## PUBLIC HEALTH

### 795, 796. SEMINAR.

Lectures and reports on current literature and special topics.  
*Credit, 1 each semester; maximum credit, 4.*

Mr. Berger.

### 800. MASTER'S THESIS.

Independent research leading to a thesis on a public health subject. Results should be suitable for publication.

*Credit, 3-10.*

## COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

### 560. THE ENVIRONMENT AND PUBLIC HEALTH.

The relationship of public health to various environmental problems. Consideration of the technological, social, economic and political resources needed to effect an improvement. Not open to Public Health graduate students.

Mr. DiNardi.

### 563. INSTITUTIONAL HYGIENE AND SANITATION.

Application of bacteriology to the prevention of food poisoning events. Evaluation of sanitary measures designed to prevent disease transmission via food and institutional environments. Role of governmental agencies.

Mr. Wisniewski.

### 564. MICROSCOPY OF WATER.

Microscopic forms of life, exclusive of bacteria. Counting and control of plankton in potable waters. Elements of limnology.

3 class hours, one 2-hour laboratory period.

Mr. Wisniewski.

### 601. PRINCIPLES OF COMMUNITY HEALTH EDUCATION.

Exploration of methods and approaches to community health, community dimensions, and community potential. Types and use of various methods leading to community action.

3 class hours, one 2-hour laboratory period.

Prerequisite, permission of instructor.

*Credit, 4.* Mr. Chen, Mr. Darity, Mr. Reynolds.

### 602. COMMUNITY DEVELOPMENT IN HEALTH EDUCATION.

Latest approaches in community development and community organization procedures. Exploratory readings, field assignments; emphasis on leadership development and coordinated community action.

Prerequisite, permission of instructor.

Mr. Reynolds.

### 604. SCHOOL HEALTH.

The principal concepts, methods and dynamics of the organization of a school health program at the elementary and secondary levels. Stress on the planning and teaching in problem areas through the efforts of all leadership persons in the school and in the community.

Prerequisite, permission of instructor.

Mr. Butts, Mr. Chen.

### 605. CURRENT ISSUES IN HEALTH EDUCATION.

Issues such as human sexuality, drug use and abuse, family planning, poverty and health and socialized health care.

Mr. Darity.

### 611. HUMAN SEXUALITY AND SEX EDUCATION.

Human sexuality in relation to modern life. Emphasis on sexuality as it may appear in the infant, the child, the adolescent, and the young married adult; examination and clarification of one of the crucial dynamics of the present era.

Prerequisite, permission of instructor.

Ms. Butts.

### 612. PUBLIC HEALTH AND FAMILY PLANNING.

Public health problems associated with family health and population limitation. Historical factors, limitation methods, and barriers and facilitators related to family health size.

Prerequisite, permission of instructor.

Mr. Darity.

### 620. INTRODUCTION TO HEALTH ADMINISTRATION.

Introduction to the philosophy, nature, and scope of modern health services. Discussion of major health issues and pro-

## GRADUATE SCHOOL

grams. Organization of health services by local, national and international health agencies.

Prerequisites, Soc 101 and Zool 101, or permission of instructor.

*Credit, 4.* Mr. Moustafa, Ms. Stamps.

### 621. ORGANIZATION AND ADMINISTRATION OF HEALTH PROGRAMS.

The organization of health programs to meet the needs of the people. Emerging health problems and approaches to solving these problems. Emphasis on comprehensive planning and evaluation procedures.

Prerequisite, PH 620 or permission of instructor.

*Credit, 4.* Mr. Moustafa, Ms. Stamps.

### 630. PRINCIPLES OF EPIDEMIOLOGY.

An epidemiological perspective of health. Approaches for (1) describing patterns of disease in groups of people and (2) elucidating processes creating differing health levels in human groups.

Ms. Goggin, Mr. Tuthill.

### 632. CHRONIC DISEASE EPIDEMIOLOGY.

An analysis of the impact of selected chronic diseases on modern society. Current theories of cause and prevention related to present and future needs in health care and research efforts.

Prerequisite, PH 630 or permission of instructor.

Ms. Goggin.

### 633. COMMUNICABLE DISEASE EPIDEMIOLOGY.

A review of selected infectious diseases; emphasis on current theories of distribution, transmission and control.

Ms. Goggin.

### 640. PUBLIC HEALTH STATISTICS.

Principles of statistics applied to the evaluation of public health practices.

Three class hours, one 1-hour laboratory period.

Prerequisite, permission of instructor.

Mr. Gross, Mr. Hosmer.

### 650. BASIC PUBLIC HEALTH LABORATORY PROCEDURES.

Standard methods used in present day applied bacteriology; soils, dairy products, water and shellfish, and air.

Two class hours, two 2-hour laboratory periods.

Prerequisite, Microbiol 140 or permission of instructor.

Mr. Litsky.

### 651. ADVANCED PUBLIC HEALTH LABORATORY PROCEDURES.

Field collection of samples, stream pollution study, food poisoning and infection, standard methods of food analysis.

One 4-hour and one 2-hour laboratory period.

Prerequisite, PH 650 or permission of instructor.

Mr. Ortiz.

### 652. CLINICAL BACTERIOLOGY.

Procedures in clinical laboratory work.

One class hour, two 2-hour laboratory periods.

Prerequisites, Microbiol 250 or permission of instructor.

Mr. Ortiz.

### 660. PRINCIPLES OF ENVIRONMENTAL HEALTH.

The application of scientific knowledge to the control of man's environment as applied to human health. The physical, chemical and biological aspects of the air, water, land, food, housing, and occupation environments.

Public health or science majors with junior standing, or permission of instructor.

Mr. DiNardi, Mr. Peters.

### 661. ENVIRONMENTAL HEALTH PRACTICES.

The concepts of control methods used by the environmental health and engineering practitioner. Topics include; water, wastewater, solid wastes, food sanitation, vector control, housing, and accident control measures.

Limited to environmental health and engineering majors.

Other science majors by permission of instructor.

Mr. Peters.

### 662. PRINCIPLES OF AIR POLLUTION.

Air pollution as a major public health problem. Topics

## UNIVERSITY OF MASSACHUSETTS

include: air pollutants, and their sources, health and economic effects, meteorology, sampling and analysis, air quality criteria and standards, control technology, control regulations and programs.  
Limited to public health and engineering majors. Other science majors by permission of instructor.

Mr. Peters.

**663. PRINCIPLES OF RADIATION PROTECTION.**  
Effect and control of radiation in the mammalian system. Includes sources, measurements, radiosensitivity, radiation chemistry, cellular effects and acute and delayed effects in occupational, medical, and environmental exposures.  
Prerequisite, permission of instructor.

Staff.

**670. PRINCIPLES OF OCCUPATIONAL HEALTH.**  
The relation of the occupational environment to the health, efficiency, and well-being of workers. Emphasis on industrial hygiene, including toxic materials, physical stresses and control methods.  
Limited to public health and engineering majors. Other science majors by permission of instructor.

Mr. Peters.

## PARTIAL LIST OF COURSES IN OTHER SCHOOLS AND DEPARTMENTS FOR WHICH MAJOR CREDIT WILL BE GIVEN IN THE DIVISION OF PUBLIC HEALTH

Biochem. 523, 524. General Biochemistry.

Bus. Ad. 742. Operations Management.

Bus. Ad. 751. Organizational Behavior

Bus. Ad. 752. Business Policy.

Chem. Eng. 660. Air Pollution Control Processes.

Civ. Eng. 571. Introduction to Environmental Pollution Control.

Civ. Eng. 672. Environmental Engineering Analysis I

Civ. Eng. 674. Radiological Health Engineering.

Civ. Eng. 675. Surface Water Quality Control.

Econ. 562. American Economic History.

Econ. 566. Economic Development.

Econ. 571. Comparative Economic Systems.

Educ. 516. Evaluation Models.

Educ. 518. Research Methods in Education.

Educ. 535. Education Media, Technology, and Systems.

Educ. 550. Conceptions of Liberal Education.

Educ. 551. Foundations of Education.

Educ. 554. Educational Anthropology.

Educ. 655. Introduction to Statistics and Computer Analysis.

Educ. 713. Human Appraisals and Evaluation.

Educ. 744. History of Higher Education in America.

Educ. 881. Comparative Education.

Educ. 884. Educational Sociology.

Microbiol. 580. Pathogenic Bacteriology.

Microbiol. 610. Immunology.

## SLAVIC LANGUAGES AND LITERATURES

Microbiol. 620. Virology.

Microbiol. 710. Advanced Immunology.

Psych. 580. Social Psychology.

Psych. 601. Educational Psychology.

Psych. 780. Advanced Social Psychology.

Sociol. 547. Elementary Statistics.

Sociol. 551. Urban Sociology.

Sociol. 561. Population Problems.

Sociol. 587. Sociology of Mental Disorders.

Sociol. 722. Sociology of Education.

Sociol. 731. Socio Gerontology.

Sociol. 732. Sociology of Medicine.

Sociol. 757. Seminar in the Family.

Sociol. 764. Population Characteristics and Socio-Economic Change.

Sociol. 766. Human Ecology: Community Structure and Interrelations.

Stat. 531, 532. Introduction to Fundamentals of Statistical Inference (I) (II).

Stat. 551. Elementary Least Squares, Regression, and Analysis of Variance.

Stat. 561. Design of Experiments (Methods).

Stat. 571. Survey Sampling.

Stat. 581. Multivariate Analysis (Methods).

Zool. 530. Systems of the Human Body

## Slavic Languages and Literatures

### GRADUATE FACULTY

LASZLO M. TIKOS, *Professor and Head of the Department of Slavic Languages and Literatures*, M.A., University of Debrecen, Hungary, 1954; Ph.D., University of Tübingen, Germany, 1962.

ROBERT A. ROTHSTEIN, *Associate Professor and Graduate Program Director*, B.S., Massachusetts Institute of Technology, 1960; M.A., Harvard, 1961; Ph.D., 1967.

GEORGE IVASK, *Professor*, Ph.D., Harvard, 1955.

J. JOSEPH LAKE, *Associate Professor*, B.A., Georgetown, 1964; M.A., Yale, 1968; Ph.D., 1969.

MAURICE I. LEVIN, *Professor*, B.A., Boston, 1953; M.A., Harvard, 1958; Ph.D., 1964.

### MASTER OF ARTS

*Prerequisites for admission:* A bachelor's degree with a major in Russian language and literature or area stud-



## SLAVIC LANGUAGES AND LITERATURES

## GRADUATE SCHOOL

ies, plus an indication of ability to do successful graduate work. Deficiencies in literary background and/or insufficient command of spoken or written Russian must be remedied before the candidate can be admitted to certain courses required for the degree.

*Language:* For this degree the student must have, or must acquire, a reading knowledge of at least one major language other than Russian or English, preferably French or German. In addition, the student is required to demonstrate proficiency in speaking, understanding, reading and writing contemporary standard Russian.

*Program of study:* A total of 30 credits, at least 24 of which must be earned in this Department. The student is required to pass a comprehensive examination in order to demonstrate 1) proficiency in the language itself; 2) familiarity with the whole body of Russian literature; 3) thorough knowledge of the structure and history of the Russian language; 4) knowledge of Russian and Soviet history and culture.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

##### SLAVIC

700. PROBLEMS COURSE.  
Directed study in some special area of literature or linguistics. *Credit, 3-12.*

710. OLD CHURCH SLAVIC.  
Introduction to the phonology, morphology, and syntax of Old Church Slavonic; selected readings and textual analysis. Required of all first-year graduate students. *Mr. Lake.*

770. PROSEMINAR I. BIBLIOGRAPHY AND METHODOLOGY.  
Introduction to tools and methods of research. Designed to acquaint with major reference works, scholarly publication, and basic approaches to literary criticism. Required of all graduate degree candidates.

771, 772. PROSEMINAR II AND III. INTERPRETATION OF TEXTS.  
Problems in philology or in literary interpretation. Reports and papers on selected texts. *Prerequisite, Slavic 770. Credit, 3 each semester.*

780. SEMINAR.  
Close study of a single topic, author or work. One main purpose is to suggest projects for independent research to advanced students. Subject matter varies from year to year. *Credit, 3-9.*

##### RUSSIAN

711. READINGS IN RUSSIAN LITERATURE OF THE EARLY PERIOD.  
Close reading and analysis of the major works of Russian literature before Pushkin. Emphasis on the place of each in Russian literature. Conducted in Russian with readings in the original. *Mr. Ivask.*

712. READINGS IN RUSSIAN LITERATURE SINCE PUSHKIN.  
Close reading and analysis of the major works of Russian literature since Pushkin. Emphasis on the place of each in Russian literature. Conducted in Russian with readings in the original. *Mr. Ivask.*

720. THE HISTORY OF THE RUSSIAN LANGUAGE.  
Historical development of the Russian language, its relation

to other languages, changes in sound, form, and vocabulary from the earliest period to the present. *Prerequisite, proficiency in Russian. Mr. Lake.*

#### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

##### SLAVIC

559. THE SLAVIC PEOPLES, THEIR LANGUAGES AND CIVILIZATIONS.  
A survey of the historical, social, intellectual, and cultural evolution of the Slavic peoples from the earliest times to the present. Emphasis on the non-Russian Slavs. Conducted in English. *Mr. Rothstein.*

##### RUSSIAN

553. DOSTOEVSKY.  
Historical and literary background. Close text analysis. Student reports. Readings of selected works in the original required of Russian majors. *Mr. Tikos.*

554. TOLSTOY.  
Historical and literary background. Close text analysis. Student reports. Readings of selected works in the original required of Russian majors. *Mr. Tikos.*

556. RUSSIAN DRAMA.  
Drama in the originals from the beginning to the establishment of a national theatre culminating in plays of Ostrovsky, Chekhov, Gorky. *Prerequisite, proficiency in Russian. Mr. Tikos.*

557. SOVIET LITERATURE.  
The beginnings and development of Soviet prose, drama, and criticism from Gorky to Sholokhov and Pasternak. *Mr. Tikos.*

558. RUSSIAN POETRY.  
Russian poetry in the originals, from the early 19th century to the present. Emphasis on the major poetic trends. *Prerequisite, proficiency in Russian. Mr. Ivask.*

566. RUSSIAN PHONETICS.  
Detailed analysis of the Russian sound system. Articulation and intonation, largely in comparison with the English sound system. Recommended for those preparing to teach Russian. *Prerequisite, proficiency in Russian. Mr. Levin.*

610. THE TEACHING OF RUSSIAN.  
A systematic analysis of the major linguistic problems facing the teacher of Russian and the methods used in solving them. *Prerequisite, Russian 665 or permission of instructor. Mr. Levin.*

619. PUSHKIN.  
The most important works of Pushkin, prose and poetry. Facility in speaking and writing Russian required. Conducted on a seminar basis with each student actively participating. *Mr. Ivask.*

620. GOGOL.  
The most important works of Gogol: *The Inspector-General*, *Dead Souls*, *The Overcoat*, and selected passages from his *Correspondence with Friends*, and other works. Facility in speaking and writing Russian required. Conducted on a seminar basis with each student actively participating. *Mr. Ivask.*

665. STRUCTURE OF RUSSIAN.  
Descriptive analysis of the morphology of contemporary standard Russian; additional emphasis on selected problems of derivation. *Prerequisite, proficiency in Russian. Mr. Levin.*

## UNIVERSITY OF MASSACHUSETTS

### 666. CONTRASTIVE STRUCTURES OF RUSSIAN AND ENGLISH.

Contrastive analysis of Russian and English with emphasis on those elements of Russian structure that differ significantly from English.  
Prerequisite, Russian 665. Mr. Rothstein

### COURSES NOT FOR MAJOR CREDIT

#### 419, 429, 439. RUSSIAN READING COURSE.

Intensive study of Russian grammar. Emphasis on developing reading ability only. Appropriate for graduate students preparing for their reading examinations. No credit.

#### 449. RUSSIAN EXPOSITORY PROSE.

Readings in non-literary Russian texts from a wide variety of scientific and technical fields. Emphasis on developing reading skill in the student's specialized field.  
Prerequisite, three semesters of Russian or equivalent. No credit.

## Sociology

### GRADUATE FACULTY

N. JAY DEMERATH, III, *Professor and Chairman of the Department of Sociology*, B.A. Harvard, 1958, M.A., California at Berkeley, 1961; Ph.D., 1964.

MICHAEL LEWIS, *Associate Professor and Graduate Program Director*, B.A., Brooklyn College, 1959; M.A., Princeton, 1962; Ph.D., 1967.

ANDY B. ANDERSON, *Associate Professor*, B.A., Southern Methodist, 1963; Ph.D., Tulane, 1967.

ALBERT CHEVAN, *Associate Professor*, B.S., Cornell, 1953; M.S., Connecticut, 1957; Ph.D., Pennsylvania, 1968.

ROLAND J. CHILTON, *Professor*, B.A., Monmouth, 1951, M.A., Wisconsin, 1958, Ph.D., Indiana, 1962.

EDWIN D. DRIVER, *Professor*, B.A., Temple, 1945, M.A., Pennsylvania, 1947; Ph.D., 1956.

ROBERT R. FAULKNER, *Associate Professor*, B.A., California at Los Angeles, 1963; M.A., 1965; Ph.D., 1968.

HILDA H. GOLDEN, *Associate Professor*, B.A., Skidmore, 1942; M.A., Duke, 1944, Ph.D., 1950.

MILTON M. GORDON, *Professor*, B.A., Bowdoin, 1939, M.A., Columbia, 1940; Ph.D., 1950.

ANTHONY B. HARRIS, *Assistant Professor*, B.A., Queens College, 1964; M.A., Cambridge, 1966; Ph.D., Princeton, 1972.

JOHN P. HEWITT, *Associate Professor*, B.A., New York at Buffalo, 1963; M.A., Princeton, 1965, Ph.D., 1966.

PAUL HOLLANDER, *Professor*, B.A., London, 1959, M.A., Illinois, 1960; M.A., Princeton, 1962; Ph.D., 1963.

CHRISTOPHER J. HURN, *Associate Professor*, B.S., London, 1960; M.A., Northwestern, 1965; Ph.D., 1968.

LEWIS M. KILLIAN, *Professor*, B.A., Georgia, 1940; M.A., 1941; Ph.D., Chicago, 1949.

JOHN W. LOY, JR., *Associate Professor of Physical Education*.

JOHN F. MANFREDI, *Associate Professor*, B.A., Pennsylvania, 1942; M.A., Harvard, 1948, Ph.D., 1951.

## SOCIOLOGY

SURINDER K. MEHTA, *Associate Professor*, B.A., Oregon, 1952; M.A., 1955; Ph.D., Chicago, 1959.

PETER PARK, *Professor*, B.A., Columbia, 1953, M.A., Yale, 1955; Ph.D., 1958.

EUGENE B. PIEDMONT, *Professor and Associate Dean of the Graduate School*, B.S., State University of New York, 1956; M.A., Rochester, 1959, Ph.D., Buffalo, 1962.

GERALD M. PLATT, *Professor*, B.A., Brooklyn College, 1955, M.A., 1957; Ph.D., California at Los Angeles, 1964.

W. CLARK ROOF, *Associate Professor*, B.A., Wofford College, 1961; M.A., North Carolina, 1969; Ph.D., 1971.

ALICE S. ROSSI, *Professor*, B.A., Brooklyn College, 1947, Ph.D., Columbia, 1957.

PETER H. ROSSI, *Professor*, B.S., C.C.N.Y., 1943, Ph.D., Columbia, 1951.

JON E. SIMPSON, *Associate Professor*, B.A., Ohio Wesleyan, 1954; M.A., Ohio State, 1958, Ph.D., 1961.

RANDALL G. STOKES, *Associate Professor*, B.A., California State at San Diego, 1966; M.A., Duke, 1967; Ph.D., 1971.

GORDON F. SUTTON, *Associate Professor*, B.A., Wayne State, 1953, M.A., 1955, Ph.D., Michigan, 1959.

CURT TAUSKY, *Professor*, B.A., Portland State, 1959, Ph.D., Oregon, 1963.

RICHARD C. TESSLER, *Assistant Professor*, B.A., Wisconsin, 1968; M.S., 1970; Ph.D., 1972.

MARCIA WESTKOTT, *Assistant Professor*, B.A., Ursinus, 1964; M.A., Pennsylvania, 1969; Ph.D., 1972.

THOMAS O. WILKINSON, *Professor*, B.A., North Carolina, 1945; M.A., Duke, 1950; Ph.D., Columbia, 1957.

JAMES D. WRIGHT, *Associate Professor*, B.A., Purdue, 1969; M.S., Wisconsin, 1970, Ph.D., 1973.

SONIA R. WRIGHT, *Lecturer*, B.S., Purdue, 1965, M.S., 1967, Ph.D., 1973.

DAVID W. YAUKEY, *Professor*, B.A., Oberlin, 1949, M.A., Washington State, 1950; Ph.D., Washington, 1956.

The graduate program in sociology is divided into two tracks. One is for Master of Arts candidates; the other is for students who have been accepted into the Doctor of Philosophy degree program. These two tracks, however, are not completely separate programs; no courses are designed specifically for either track. Although students entering with a bachelor's degree are usually required to obtain a Master of Arts degree en route to the Ph.D., the M.A. student may petition the Graduate Studies Committee for a waiver of the thesis requirement and thereby transfer to the doctoral program.

Students working toward either the Master of Arts or the Doctor of Philosophy degree in sociology must fulfill the general requirements of the Graduate School. The Doctor of Philosophy degree utilizes as its

guiding principle the effective preparation of candidates to excel at two tasks: (1) the Comprehensive Examination and (2) the dissertation. Since no relationship is assumed to obtain between specific courses taken and the high expectations of the Comprehensive Examination, course requirements are deliberately flexible, but require the following: Advanced Statistics, Advanced Methods (to be selected from four alternative methods seminars), Advanced Theory (to be selected from five alternative theory seminars). The Comprehensive Examinations cover one of two major areas selected by the student, Structural Sociology or Social Psychology, plus a "special field" selected by the student.

The Comprehensive Examination may not be taken until a minimum of 30 credits of graduate course work has been completed. Upon successfully passing the Comprehensive Examination, the student is admitted to candidacy for the Ph.D. degree and may proceed with the dissertation. A public oral final examination, not necessarily limited to the dissertation, is also required at its completion.

There is no general foreign-language requirement for degree qualification in sociology. Doctoral students may be expected to demonstrate satisfactory levels of competence in one or more languages other than English in those cases where such a requirement is deemed desirable by the faculty (e.g., a specific dissertation project).

Master's degree candidates must complete a minimum of 30 credits. Of these at least 24 credits must be for coursework; six are awarded for successfully completing a thesis. Normally, *at least two* of the required eight courses shall be taken in sociological theory, *at least one* in research methods, and *another* in statistics. The thesis, followed by a final oral examination, is required of all terminal master's degree candidates.

Applicants for admission to graduate study in sociology are expected to be familiar with fundamental sociological concepts and literatures. Candidates may be asked to remove deficiencies, without receiving graduate credit, prior to or after admission.

Applications for admission will *not* be evaluated until *all* credentials have been received. These include Graduate Record Examination scores (both Aptitude and Advanced), two letters of recommendation, and transcripts of all previous academic study. Students requesting any form of financial aid are responsible for ensuring that all application materials are on file in the Graduate School by February 1 (for fall entrance) and October 1 (for spring entrance). The respective deadlines for filing applications for admission are March 1 and October 1, but early submission is strongly encouraged.

Applicants from countries whose native tongue is not English must, in addition to submitting all the above credentials, take the Test of English as a Foreign Language (TOEFL). The Graduate School also requires all foreign students to take an English examination at the beginning of their initial semester, after admission. Remedial work may be prescribed on the basis of this examination.

A brochure, "Graduate Studies Program," which details the basic emphasis and requirements of the Department's programs, is available on request to the Graduate Program Director.

#### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY

##### 700. SPECIAL PROBLEMS.

A special project in sociology.  
Prerequisite, permission of instructor.

##### 712. SOCIAL CHANGE.

Analysis of change as a process, especially the factors making for acceptance or rejection of innovations. Consequences of contacts between societies, with emphasis on underdeveloped areas.

Prerequisite, Soc 272 or permission of instructor.

Mr. Stokes.

##### 713. SOCIOLOGY OF KNOWLEDGE.

The intellectual and social background of Karl Mannheim's and Max Scheler's *Sociology of Knowledge*. Discussion of selected writings. Comparisons with Durkheim, Sorokin, Mead.

##### 714. CRIMINOLOGY.

Criminological theories, past and present, with emphasis on present research trends as they relate to theoretical formulations.

Prerequisite, permission of instructor.

Mr. Chilton, Mr. Driver, Mr. Simpson.

##### 717. JUVENILE DELINQUENCY.

Theories of causation and treatment of delinquency.

Prerequisite, Soc 278 or permission of instructor.

Mr. Chilton, Mr. Driver, Mr. Simpson.

##### 718. INDUSTRIAL SOCIOLOGY.

The different ways selected industrial or developing societies are organized to elicit work efforts, e.g., Russia, China, Israel, Japan, U.S., Cuba.

##### 719. THE SOCIOLOGY OF RELIGION.

The relations of religious ideology and ecclesiastical organization to the total social institutional system. Attention to the religions of larger civilizations, especially Islam, Buddhism, medieval Christianity, Gentile paganism, Protestantism, and Judaism.

Mr. Manfredi, Mr. Roof.

##### 720. CONTEMPORARY BELIEF SYSTEMS.

Comparative belief systems in modern industrial societies, including both theoretical and methodological considerations. Problems of defining "religion" in contemporary society, theoretical approaches for analyzing modern belief systems, and problems of method and analysis.

Mr. Roof.

##### 722. SOCIOLOGY OF EDUCATION.

Educational characteristics of an industrial population; comparative social structures and their school systems; educational selection and social stratification; educational development as effect and cause of social change; the culture of schools and universities.

Prerequisites, one graduate course in sociological theory and one course in research methods.

Mr. Hurn, Mr. Platt.

##### 725. SYMBOLIC INTERACTION SEMINAR.

The symbolic interactionist approach to social psychology and the social structure, including historical as well as contemporary contributions. Emphasis on the relation of symbolic interaction to other approaches in sociology.

Mr. Hewitt.

##### 729. SOCIOLOGY OF SMALL GROUPS.

Small human groups viewed as relatively permanent relational structures which emerge out of the process of social interaction. Theoretical discussion of concepts and logic of the process of emergence.

Prerequisites, one prior graduate course in social psychology or permission of instructor.

##### 731. SOCIAL GERONTOLOGY.

Implications of aging for society and the individual. Position of the aged in nonindustrial and industrialized societies. Changing roles of older people in the American family and the community.

Prerequisites, Soc 257 or permission of instructor.



UNIVERSITY OF MASSACHUSETTS

**732. SOCIOLOGY OF MEDICINE.**  
A survey of theory and research concerned with medical care as a social institution. The relation of social factors to illness, and social process involved in medical education.  
Prerequisite, Soc 286 or permission of instructor.  
Mr. Piedmont.

**733. POLITICAL SOCIOLOGY.**  
Analysis of the major topics and problems of political sociology in a comparative context. Attention to contemporary social movements, political pluralism and extremism, the social roots of totalitarian and democratic societies.  
Mr. Hollander, Mr. Wright.

**735. SOCIAL MOVEMENTS**  
Analysis of the genesis, career, values, norms, structure, and endproducts of social movements, including studies of selected movements.  
Mr. Killian.

**736. COLLECTIVE BEHAVIOR.**  
The processes of interaction through which new social norms and forms of social organization emerge in the crowd, the public, and the social movement. Emphasis on principles of collective behavior in the crowd.  
Mr. Killian.

**737. SEMINAR ON PUBLIC POLICY AND SOCIAL SCIENCES.**  
The mobilization of the social sciences for the solution of domestic social problems. More concerned with the strategy of applied social science in the context of social policy than with substantive issues.  
Mr. Sutton.

**740. CRISIS RESOLUTION AND COMMUNICATION.**  
Discussion of relevant concepts. Case studies on international crises from 1947-1968 with attention to the calculations of decision-makers.

**750. BLACK MAN IN AMERICA**  
A socio-historical analysis of the interaction of the Black man and the American environment, from slavery to his migration to urban areas and subsequent isolation in the black ghetto.  
Mr. Killian

**757. SEMINAR IN THE FAMILY**  
Cross-cultural examination of family systems: their development, factors influencing changes, and direction of changes. Comparison of theoretical frames of relevance for theory construction and research.  
Prerequisite, Soc 257 or permission of instructor.  
Mr. Korson, Mr. Lewis, Mr. Piedmont.

**758. FAMILY AND KINSHIP COMPONENTS IN CONTEMPORARY SOCIAL PROBLEMS.**  
Relative importance of family and kinship in the analyses of contemporary sociologists, how this analysis informs inquiry into problems such as political and economic modernization, urbanization, stratification, the institutionalization of poverty.  
Mr. Lewis.

**759. SOCIAL STRATIFICATION.**  
The major contemporary writers and their contribution to this area. Research techniques in the analysis of social class and social mobility.  
Prerequisite, Soc 259 or permission of instructor.  
Mr. Gordon.

**762. DEMOGRAPHY.**  
An analysis of the demographic transition from peasant-agriculturalism to urban industrialism. Emphasis on the consequences of this transition for patterns of settlement and for fertility, mortality, and migration.  
Prerequisite, Soc 561 or permission of instructor.  
Mrs. Golden, Mr. Wilkinson.

**764. POPULATION CHARACTERISTICS AND SOCIOECONOMIC CHANGE.**  
Analysis of relationship between selected demographic characteristics and socioeconomic changes, with attention to the sociological uses of statistical information on the world's countries.  
Prerequisite, Soc 561 or permission of instructor.  
Mrs. Golden.

SOCIOLOGY

**766. HUMAN ECOLOGY: COMMUNITY STRUCTURE AND INTERRELATIONS**  
Theory and research of community functions and systems of communities with special reference to ecological organization and change.  
Mr. Mehta.

**772. POPULATION OF INDIA AND PAKISTAN**  
Trends in population growth and its distribution among various social strata. The relative influence of fertility, mortality, migration, social organization, and cultural values on growth patterns.  
Prerequisites, Soc 561 and 795.  
Mr. Driver.

**781. HISTORY OF SOCIOLOGICAL THEORY.**  
A survey of literature from classical times to the Utilitarians.  
Prerequisite, Soc 282 or permission of instructor.  
Mr. Manfredi.

**782. THE DEVELOPMENT OF SOCIOLOGICAL THEORY.**  
Selected European and American contributors and their systems of theory, in biographical, historical, and sociological perspective.  
Prerequisite, permission of instructor  
Mr. Page

**783. CONTEMPORARY SOCIOLOGICAL THEORY**  
The literature from 1900 to the present  
Prerequisite, Soc 282 or permission of instructor.  
Mr. Gordon.

**784. ADVANCED SOCIOLOGICAL THEORY**  
A methodological analysis of contemporary sociological theory. Emphasis on theory construction, formalization and evaluation.  
Prerequisite, Soc 282 or permission of instructor  
Mr. Roof

**785. COMPLEX ORGANIZATIONS**  
Major theories of organization. Emphasis on recent findings on the determinants of individual behavior and organizational effectiveness.  
Mr. Tausky.

**792. PROBLEMS OF THEORETICAL ANALYSIS IN CONTEMPORARY SOCIOLOGY.**  
Alternative theoretical orientations, including neopositivism, functionalism, systems theory, phenomenology; problems of intellectual style, sociology and other disciplines; human perspectives; sociology of knowledge and of sociology  
Prerequisite, permission of instructor.  
Mr. Page.

**794. COMPUTER METHODS IN SOCIOLOGY**  
A survey of computer-oriented analytical tools and data-processing systems available to the sociologist. The pace of the computer in research and the development of mathematical sociology. Students program and test a statistical or mathematical model.  
Prerequisite, knowledge of some computer language.  
Mr. Chevan

**795. RESEARCH METHODS.**  
Logical analysis of sociological inquiry; survey of major research techniques and examination of principal methodological problems in sociology.  
Mr. Chevan, Mr. Chilton, Mr. Park

**796. RESEARCH METHODS.**  
Research techniques in sociology, including: formulating research objectives; collecting, processing, and analyzing data for a project organized around the problems of measurement in sociology.  
Prerequisites, Soc 547 and 795.  
Mr. Chevan, Mr. Chilton, Mr. Park.

**797. SURVEY DESIGN AND ANALYSIS**  
Design and analysis of descriptive and explanatory sample surveys. Special attention to the problems of longitudinal studies designed to evaluate the effects of a complex experience.  
Prerequisite, Soc 795.  
Mr. Chevan.

## SPANISH

### 798. TECHNIQUES OF DATA COLLECTION IN SOCIAL RESEARCH.

The validity and reliability for various purposes of a number of observational techniques, including: the interview, the paper and pencil questionnaire, content analysis, and participant observation.

Prerequisite, Soc 795.

Mr. Chevan.

### 800. MASTER'S THESIS.

Credit, 6.

### 900. DOCTORAL DISSERTATION.

Credit, 18.

## COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

### 547. ELEMENTARY STATISTICS.

Basic statistical principles and techniques with special reference to application in sociology.

Mr. Mehta, Mr. Park.

### 548. SOCIAL STATISTICS.

Introduction to principles of multivariate techniques, including sociology and related fields.

Prerequisite, Soc 547 or equivalent.

Mr. Mehta, Mr. Park.

### 551. URBAN SOCIOLOGY.

A comparative analysis of world urbanization with special reference to demographic characteristics of urban populations, urban ecology, and urban social structure.

Prerequisite, Soc 101 or permission of instructor.

Mrs. Golden, Mr. Mehta.

### 552. URBANIZATION AND THE CITY.

A comparative analysis of world urbanization, its causes, and consequences. Regional variations in the nature of urbanization and trends in major countries related to major aspects of the social structure of cities.

Prerequisite, Soc 101.

Mrs. Golden.

### 556. RACE RELATIONS.

Social, economic, and political aspects of racial problems in the U.S., with particular reference to the Negro and major ethnic groups. Problems resulting from contact of races in Asia, Africa, and South America.

Mr. Gordon.

### 557. FAMILY.

Development of the customs of courtship and marriage of the contemporary American family; basis causes of changes and trends of the family including mate selection, marriage laws, marital prediction, husband-wife relations.

Mr. Korson.

### 558. SOCIAL INTERACTION.

The processes leading to the socialization of the group member; emphasis on role properties, play, control models, and power definitions.

Mr. Hewitt.

### 561. POPULATION PROBLEMS.

Physical and social factors which influence population change through births, deaths, and migration; emphasis on the population problems of underdeveloped areas in the world today.

Mr. Wilkinson.

### 565. THE POPULATION OF JAPAN.

A demographic survey of the history and development of modern Japan. Emphasis on the similarities and contrasts between Japan's demographic transition and that of the West.

Prerequisite, Soc 261 or equivalent.

Mr. Wilkinson.

### 570. SOCIAL STRUCTURE OF INDIA.

Origins, distribution, and cultural traits of the major groups in India. Marriage, family, and caste patterns, and their relation to and positions in the economic and political system.

Mr. Driver.

### 575. SOCIAL PROBLEMS.

Incidence, distribution, and interrelations among the major types of social tensions in human societies. Research and field trips likely.

Mr. Lewis.

## GRADUATE SCHOOL

### 580. SOVIET SOCIETY.

Survey of the major social institutions, processes, and problems of Soviet society. Special reference to official and popular values and norms, stratification, social control, the family, types of socialization and social problems.

Mr. Hollander.

### 587. SOCIOLOGY OF MENTAL DISORDERS.

Influence of social factors on diagnosis, treatment, and possible etiology of mental disorders. Application of sociological concepts and methods in considering the nature and extent of mental disorders.

Prerequisite, Soc 286 or permission of instructor.

Mr. Piedmont.

### 592. BACKGROUND TO THE STUDY OF SOCIAL WELFARE.

Historical development and current status of British and American concerns about poverty in the context of the Industrial Revolution; sociological perspectives concerning differentials in access to economic security and social rewards.

Mr. Sutton.

### 663. FERTILITY AND SOCIETY.

A review of past and present trends in fertility on a world-wide basis, an analysis of the social determinants and consequences of these trends, and an assessment of likely future trends.

Prerequisites, Soc 261 and permission of instructor.

Mr. Yaukey.

### 667. POPULATION THEORIES AND POLICIES.

The major theories concerning population growth, distribution, internal and international migration, and population quality. Theorists include the pre-Malthusians, Malthus, Marx, Keynes, Stouffer, Petersen, Myrdal, Clark, Coale, Keyfitz, Spengler, Davis, and others.

Mr. Driver.

## INTERDEPARTMENTAL COURSES

### SOCIAL SCIENCES 550. AFRICA, SOUTH OF THE SAHARA.

Introductory study of recent political, economic, and social developments in the principal countries in Africa, south of the Sahara.

Prerequisites, at least two courses in one or more of the following fields: government, economics, sociology.

Mr. Driver.

### SOCIAL SCIENCES 569. INDIA AND SOUTH ASIA.

Introductory study of recent political, economic, and social developments in India and the countries of South Asia.

Prerequisites, at least two semester courses in one or more of the following fields: government, economics, sociology, anthropology.

Mr. Driver.

## RELATED COURSES

### PSYCH 780. ADVANCED SOCIAL PSYCHOLOGY.

### PSYCH 781. ATTITUDES.

### PSYCH 784. GROUP DYNAMICS.

### PUBLIC HEALTH 735. SOCIAL EPIDEMIOLOGY.

## Spanish

## GRADUATE FACULTY

H. L. BOUDREAU, *Professor, Chairman of the Department of Spanish and Portuguese*, B.A., Illinois, 1948; M.A., 1950; Ph.D., Wisconsin, 1965.

SUMNER M. GREENFIELD, *Professor and Graduate Program Director*, B.A., Boston College, 1946; M.A., Boston University, 1947; M.A., Harvard, 1951; Ph.D., 1957.

## UNIVERSITY OF MASSACHUSETTS

## SPANISH

ANTONIO ANDRADE, JR., *Assistant Professor*, B.A., San Jose State, 1959; M.A., 1967; Ph.D., Indiana, 1975.

ROBERT L. BANCROFT, *Professor*, B.A., Washington, 1935; M.A., 1947; Ph.D., Columbia, 1957.

PEDEO BARREDA, *Associate Professor*, M.A., State University of New York at Buffalo, 1966; Ph.D., 1969.

BLANCHE DE PUY, *Professor*, B.A., Wellesley, 1942; M. Litt., Pittsburgh, 1951; Ph.D., Stanford, 1961.

FRANCISCO FERNÁNDEZ-TURIENZO, *Associate Professor*, B.A., Universidad Pont. de Salamanca, 1956; M.A., University of Basilea (Switzerland), 1965; Ph.D., 1965.

JULES PICCUS, *Professor*, B.A., Queens, 1942; M.A., Princeton, 1949; Ph.D., 1951.

IRVING P. ROTHBERG, *Professor*, B.S., Temple University, 1948; M.A., Pennsylvania State, 1951; Ph.D., 1954.

NINA M. SCOTT, *Associate Professor*, B.A., Wellesley, 1959; M.A., Stanford, 1961; Ph.D., 1968.

ROSALIE S. SOONS, *Assistant Professor*, A.B., Bryn Mawr, 1947; M.A., Connecticut, 1965; Ph.D., 1967.

JOHN J. STACZEK, *Assistant Professor*, B.A., Ohio State, 1965; M.S., Georgetown, 1970; Ph.D., 1973.

HARLAN G. STURM, *Associate Professor*, B.A., Minnesota, 1963; M.A., 1965; Ph.D., North Carolina, 1967.

SIDNEY F. WEXLER, *Professor*, B.S., New York University, 1932; M.A., Colorado, 1933; Ph.D., New York University, 1952.

JUAN C. ZAMORA, *Assistant Professor*, M.A., New York at Buffalo, 1966; Ph.D., 1971.

### REQUIREMENTS FOR THE MASTER OF ARTS DEGREE

Students may specialize in Literature, in Bilingual-Bicultural Studies, or in Hispanic Linguistics. In addition to the general requirements for the degree at the University, the following special requirements must be met:

1. Spanish 707, 708 (General View of Hispanic Literature and Methods of Analysis and Research).
2. One course in Hispanic Linguistics. (Contact the Department for the specific number and title).
3. A reading knowledge of a second foreign language pertinent to the student's program.
4. Spanish 500 may be elected for six credits.
5. Terminal examinations as follows:
  - a. Comprehensive examination.
  - b. For those electing Spanish 800, oral defense of thesis.
6. Students specializing in Bilingual-Bicultural Studies have a 36-credit program but are relieved of requirements 1 and 3 above.

### REQUIREMENTS FOR THE Ph.D. DEGREE

Students may specialize in Literature or in Hispanic Linguistics. In addition to the general requirements for the degree at the University, the following special requirements must be met:

1. Spanish 707, 708 (General View of Hispanic Literature and Methods of Analysis and Research), or equivalent knowledge.
2. One course in Hispanic Linguistics, or equivalent knowledge. (Contact the Department for the specific number and title).
3. A reading knowledge at the intermediate level of two foreign languages pertinent to the student's program.
4. Written and oral comprehensive examinations.
5. Spanish 900 (Doctoral Dissertation).

N.B.: Graduate programs in the Department of Spanish and Portuguese have recently been revised.

Courses not listed below (particularly in Hispanic Linguistics and in Bilingual-Bicultural Studies) are also being offered.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

#### COURSE NOT FOR MAJOR CREDIT

##### 409. GRADUATE READING COURSE

For graduate students preparing for the M.A. or Ph.D. reading examination. No previous knowledge of Spanish required. *No credit.*

##### 700. PROBLEM COURSE

Directed study in some phase of linguistics literature. *Credit, 1-6.*

##### 707, 708. GENERAL VIEW OF HISPANIC LITERATURE AND METHODS OF ANALYSIS AND RESEARCH *Credit, 6.*

Specific topics of Spanish 710 through 799 announced in the spring of the preceding year.

##### 710. THE SPANISH LANGUAGE

The development of Spanish and its relationship to other Romance languages. *Credit, 3-12. Mr. Piccus.*

##### 715. SEMINARS IN EARLY MEDIEVAL LITERATURE

A phase of Spanish literature of the 12th and 13th centuries. Prerequisite, a knowledge of Latin, Spanish 710, or equivalent. *Credit, 3-12. Mr. Piccus, Mr. Sturm.*

##### 720. SEMINARS IN LATER MEDIEVAL LITERATURE

A phase of Spanish literature of the 14th and 15th centuries. *Credit, 3-12. Mr. Piccus, Mr. Sturm.*

##### 730. SEMINARS IN RENAISSANCE AND BAROQUE LITERATURE

Aspects of Spanish intellectual and spiritual movements of the 16th and 17th centuries as reflected in Renaissance and Baroque literature. *Credit, 3-12. Mr. F. Turienzo, Mr. Rothberg.*



## SPANISH

735. SEMINARS IN THE GOLDEN AGE OF POETRY.  
The poets and poetic currents of the Spanish Golden Age.  
*Credit, 3-12. Mr. F-Turienzo, Mr. Rothberg.*

740. SEMINARS IN GOLDEN-AGE FICTION.  
Aspects of the novel in 16th- and 17th-century Spain.  
*Credit, 3-12. Mr. F-Turienzo, Mr. Rothberg.*

745. SEMINARS IN THE GOLDEN AGE OF DRAMA.  
The development and apogee of the Spanish *comedia* in the Golden Age.  
*Credit, 3-12. Mr. Rothberg.*

755. SEMINARS IN 18TH-CENTURY LITERATURE.  
Phases of Spanish thought and literature in the 18th century.  
*Credit, 3-12. Mr. Greenfield.*

760. SEMINARS IN 19TH-CENTURY POETRY AND DRAMA.  
Aspects of the theater and poetry of 19th-century Spain.  
*Credit, 3-12. Mr. Boudreau, Mr. Greenfield, Ms. Soons.*

765. SEMINARS IN 19TH-CENTURY PROSE.  
Nineteenth-century Spanish thought or narrative literature.  
*Credit, 3-12. Mr. Boudreau, Ms. De Puy, Mr. Greenfield.*

770. SEMINARS IN INTELLECTUAL AND ESTHETIC MOVEMENTS.  
Intellectual and esthetic developments in the modern Hispanic world.  
*Credit, 3-12. Ms. De Puy, Mr. F-Turienzo, Mr. Greenfield.*

775. THEATER OF LORCA. *Credit, 3-12.*

780. SEMINARS IN 20TH-CENTURY PROSE.  
The novel, short story, and essay in modern Spain.  
*Credit, 3-12. Mr. Boudreau, Ms. De Puy, Mr. Greenfield.*

785. SEMINARS IN SPANISH-AMERICAN POETRY AND DRAMA.  
Individual Spanish-American poets or dramatists, and in groups or movements.  
*Credit, 3-12. Mr. Bancroft, Mr. Barreda.*

790. SEMINARS IN SPANISH-AMERICAN PROSE.  
The novel, short story, chronicle, and essay in Spanish America.  
*Credit, 3-12. Mr. Bancroft, Mr. Barreda.*

799. SEMINARS IN HISPANIC LANGUAGE AND LITERATURE.  
Phases of Spanish language and Spanish and Spanish-American literature that involve two or more of the areas of courses number 710 through 790.  
*Credit, 3-12.*

800. MASTER'S THESIS. *Maximum credit, 9.*

900. DOCTORAL DISSERTATION. *Credit, 15.*

COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS  
(For either major or minor credit)

609. ADVANCED COMPOSITION.  
The elements of stylistics. *Mr. Barreda.*

620. SPANISH LITERATURE TO 1500.  
Spanish literature in the Middle Ages and Renaissance.  
*Mr. Piccus, Mr. Sturm.*

621. SPANISH MEDIEVAL POETRY.  
Spanish epic, lyric poetry and other verse of the period.  
*Mr. Piccus, Mr. Sturm.*

622. SPANISH MEDIEVAL PROSE.  
Narrative, historical, and didactic prose works of medieval Spain.  
*Mr. Piccus, Mr. Sturm.*

631. PROSE OF THE GOLDEN AGE.  
Major prose works in 16th- and 17th-century Spain. Emphasis on the novel, excluding the *Quijote*.  
*Mr. F-Turienzo, Mr. Rothberg.*

## GRADUATE SCHOOL

632. LYRIC POETRY OF THE GOLDEN AGE.  
Spanish poetry of the 16th and 17th centuries from Garcilaso to Gongora.  
*Mr. F-Turienzo, Mr. Rothberg.*

633. DRAMA OF THE GOLDEN AGE.  
The *comedia* during the period of maximum creation, 1556-1681.  
*Mr. Rothberg, Mr. Sturm.*

634. CERVANTES.  
Intensive study of the *Quijote*. *Mr. F-Turienzo.*

640. SPANISH LITERATURE FROM 1700 THROUGH ROMANTICISM.  
Spanish literature and thought in the 18th century and the Romantic movement. *Mr. Greenfield.*

641. 19TH-CENTURY SPANISH NOVEL.  
Prose fiction in the second half of the 19th century.  
*Mr. Boudreau, Ms. De Puy, Mr. Greenfield, Ms. Soons.*

645. MODERN SPANISH THEATER.  
Development of the theater in Spain from the post-romantic period to the present. *Mr. Greenfield.*

646. 20TH CENTURY SPANISH PROSE FICTION.  
The novel in Spain from the Generation of '98 to the present.  
*Mr. Boudreau, Ms. De Puy, Mr. Greenfield, Ms. Soons.*

647. MODERN SPANISH POETRY.  
Poetry in Spain from Becquer to the present.  
*Mr. Boudreau, Ms. Soons.*

648. THE ESSAY AS A LITERARY GENRE.

650. SPANISH-AMERICAN LITERATURE TO 1900.  
A general view, with intensive study of selected major works.  
*Mr. Bancroft, Mr. Barreda.*

651. THE MODERNISTA MOVEMENT.  
*Modernismo* in Spanish America, including a comparative study of its manifestations in Spain.  
*Mr. Bancroft, Mr. Barreda, Mr. Greenfield.*

652. MAJOR SPANISH-AMERICAN WRITERS.  
Intensive study of major figures in Spanish-American literature.  
*Mr. Bancroft, Mr. Barreda, Mr. Greenfield.*

653. SPANISH-AMERICAN POETRY AND DRAMA SINCE MODERNISMO.  
The principal authors and movements in the 20th century.  
*Mr. Bancroft, Mr. Barreda.*

655. MODERN SPANISH-AMERICAN PROSE FICTION.  
Spanish-American prose fiction in the late 19th and early 20th centuries.  
*Mr. Bancroft, Mr. Barreda.*

656. CONTEMPORARY PROSE FICTION IN SPANISH AMERICA.  
The recent novel and short story.  
*Mr. Bancroft, Mr. Barreda.*

657. HISPANIC LITERATURE OF THE CARIBBEAN.  
A comparative study of the development of the literature of Puerto Rico, Cuba and the Dominican Republic, and of the historical cultural and socio-political factors that have shaped it.  
*Mr. Barreda.*

673. AMERICAN POETRY AND DRAMA.

675. THE TEACHING OF SPANISH.  
A systematic analysis of the major problems anticipated in the teaching of Spanish. *Mr. Staczek.*

678. SPANISH PHONETICS.  
Spanish phonetic theory and its application to the teaching of Spanish.  
3 class hours, 1 laboratory session. *Mr. Staczek, Mr. Zamora.*

## UNIVERSITY OF MASSACHUSETTS

679. **THE STRUCTURE OF MODERN SPANISH.** Syntax and morphology of contemporary Spanish. Both the oral and written systems analyzed from the points of view of the major modern grammatical theories. Structural differences between Spanish and English; problems of interference for the nonnative. Mr. Zamora.

## Sport Studies

### GRADUATE FACULTY

HAROLD J. VANDERZWAAG, *Professor and Head of the Department of Sport Studies*, B.A., Calvin College, 1951; M.A., Michigan, 1952; Ph.D., 1962.

PETER J. GRAHAM, *Assistant Professor*, B.S., Massachusetts, 1964; M.A., Michigan State, 1965; Ed.D., Massachusetts, 1975.

GUY M. LEWIS, *Professor*, B.S., East Carolina, 1950; M.Ed., North Carolina, 1952; Ph.D., Maryland, 1964.

JOHN W. LOY, *Professor*, Lewis & Clark, 1961; M.A., Iowa, 1963; Ph.D., Wisconsin, 1967.

BETTY SPEARS, *Professor*, B.S., Purdue, 1940; M.S., Wellesley, 1944; Ph.D., New York University, 1956.

JUDITH S. TOYAMA, *Assistant Professor*, B.A., Southern California, 1969; M.A., Wisconsin, 1971; Ph.D., Waterloo, 1975.

### GRADUATE FACULTY MEMBERS IN THE SCHOOL OF PHYSICAL EDUCATION WITH RELATED INTERESTS

WALTER KROLL, *Professor*, P.E.D., Indiana, 1959.

C. LYNN VENDIEN, *Professor*, Ed.D., Stanford, 1957.

## SPORT STUDIES

### CURRICULAR REQUIREMENTS

M.S. in Physical Education and Ph.D. in Human Movement

Graduate degrees offered by the School of Physical Education are the Master of Science (M.S.) in Physical Education and the Doctor of Philosophy (Ph.D.) in Human Movement. Three programs of study leading to the M.S. degree have been structured as concentrations and identified as Exercise Science, General and Sport Studies. The latter concentration includes a related professional program in Sport Administration. Concentrations in either Exercise Science or Sport Studies are available at the Ph.D. level. Sport Studies consists of specialization in the history, sociology, social psychology and philosophy of sport. Outlined below are specific curricular requirements for the concentrations in sport studies:

## SPORT STUDIES

|                            |           |
|----------------------------|-----------|
| M.S. ( <i>non-thesis</i> ) |           |
| *Core                      | — 12 hrs. |
| Seminars                   | — 9       |
| Electives                  | — 9       |
|                            | 30 hrs.   |

|                        |           |
|------------------------|-----------|
| M.S. ( <i>thesis</i> ) |           |
| *Core                  | — 12 hrs. |
| Thesis                 | — 6       |
| Seminars               | — 6       |
| Electives              | — 6       |
|                        | 30 hrs.   |

|                                                                  |           |
|------------------------------------------------------------------|-----------|
| M.S. — <i>Sport Administration</i>                               |           |
| *Core                                                            | — 12 hrs. |
| 700. Special Problems<br>(Sport Administration)                  | — 3       |
| 700. Special Problems<br>(Internship in Sport Admin.)            | — 6       |
| Electives (at least 6 hours in the<br>School of Business Admin.) | — 9       |
|                                                                  | 30 hrs.   |

\*Core Courses —  
563 Sport and Theories of Psychological Processes  
564 Philosophy of Sport  
565 Sociology of Sport  
561 World History of Sport, or  
662 History of Sport in the United States

|                                                                       |         |
|-----------------------------------------------------------------------|---------|
| <i>Ph.D.</i>                                                          |         |
| A. School of Physical Education —                                     |         |
| Content Courses                                                       | 30 hrs. |
| 1. Basic Courses<br>(500 and 600 level)                               | 15 hrs. |
| 2. Advanced Courses                                                   | 15 hrs. |
| a. Seminars in major and minor<br>specializations*                    | 6 hrs.  |
| b. Advanced Topics and<br>Seminars                                    | 9 hrs.  |
| B. School of Physical Education —                                     |         |
| Research                                                              | 30 hrs. |
| 1. Thesis (800)                                                       | 6 hrs.  |
| 2. Seminar in Human<br>Movement (899)                                 | 6 hrs.  |
| 3. Dissertation (900)                                                 | 18 hrs. |
| C. Related Work (taken in departments outside<br>School of Phys. Ed.) | 30 hrs. |
| 1. Cognate Field**                                                    | 15 hrs. |
| 2. Electives                                                          | 15 hrs. |
| TOTAL                                                                 | 90 hrs. |

(18 of the 30 hours in related work must be taken at the 700 or above level.)

\*Seminar —  
782. Seminar in the Sociology of Sport

\*\*Study in one of the following departments—  
History  
Sociology  
Psychology  
Philosophy

## THEATER

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

(For either major or minor credit)

#### Sociology of Sport

##### 565. SOCIOLOGY OF SPORT.

Sport as a social institution, including both the structure and function of sport.

Prerequisite, PE 200.

Mr. Loy.

##### 782. SEMINAR IN THE SOCIOLOGY OF SPORT.

An analysis of the utility of sociological paradigms, models and theories for the explanation of sport phenomena, including autotelic and agonetic behavior.

Prerequisites, PE 565, one sociological theory course, and one research methods course.

Mr. Loy.

#### Philosophy of Sport

##### 564. PHILOSOPHY OF SPORT.

A philosophical analysis of key concepts which influence the objectives of various programs in the broad realm of sport.

Prerequisite, PE 203.

Mr. VanderZwaag.

##### 664. ATHLETICS: A PHILOSOPHIC INQUIRY.

A critical analysis of those historical, sociological, and psychological factors which have influenced the concept of athletics and caused issues in programs associated with this concept.

Prerequisite, PE 564.

Mr. VanderZwaag.

#### History of Sport

##### 561. WORLD HISTORY OF SPORT.

Factors influencing the rise of sport and the role of sport in society.

Prerequisite, PE 202.

Mr. Lewis.

##### 662. HISTORY OF SPORT IN THE UNITED STATES.

Sport in America from earliest times to the contemporary period. Emphasis on the social, political, and economic factors which affected the development of sport.

Prerequisite, PE 561.

Mr. Lewis.

##### 666. HISTORY OF SCHOOL AND COLLEGE SPORT.

Developments in sport at educational institutions from the age of unorganized play to the present.

Prerequisites, PE 561 or PE 662.

Mr. Lewis.

#### Other Courses

##### 663. COMPARATIVE SPORT.

A comparative analysis of sport in selected countries. Emphasis on historical, cultural, and social values affecting the status of sport.

Prerequisite, PE 561.

Miss Vendien.

##### 700. SPECIAL PROBLEMS.

Topics include: sport and theories of psychological processes, history of women in sport, sport administration, internship in sport administration, the social psychology of sport, the philosophy of sport, the history of sport, and advanced individual research topics.

Credit, 1-9, fall; 1-6, spring.

##### 799. CONTEMPORARY PROBLEMS IN HUMAN MOVEMENT.

Seminar, review, analysis, and evaluation of contemporary problems. A broad review of literature combined with critical analysis of selected items.

Credit, 3-6.

##### 800. MASTER'S THESIS.

Credit, 3-6

## GRADUATE SCHOOL

### 834. KINESTHETIC FORM.

The problem of the definition of form in movement as it relates to learning.

Miss Hubbard.

### 899. SEMINAR IN HUMAN MOVEMENT.

Topics in human movement not covered in regular course.

Credit, 1 each semester; Maximum credit, 6.

## Theater

### GRADUATE FACULTY

DAVID M. KNAUF, *Professor and Chairman of the Department of Theater*, B.F.A., Ohio University, 1958; M.A., 1960; Ph.D., Iowa, 1962.

DORIS E. ABRAMSON, *Associate Professor and Graduate Program Director*, B.A., Massachusetts, 1949; M.A., Smith, 1951; Ph.D., Columbia, 1967.

JEFFREY A. FIALA, *Associate Professor*, B.S., Wisconsin, 1967; M.F.A., 1970.

JUNE B. GAEKE, *Assistant Professor*, B.S., Wisconsin, 1969; M.F.A., 1971.

HARRY E. MAHNKEN, *Associate Professor*, B.A., Geneva College, 1951; M.F.A., Carnegie Institute of Technology, 1955.

### MASTER OF FINE ARTS IN THEATER

The Department of Theater offers a three-year, 60-credit, in-residence program leading to the degree of Master of Fine Arts in Theater with specialized training in dramaturgy (theatrical criticism and playwriting), performance (acting and directing), and scenography (scenic, lighting and costume design and execution).

The training program is preprofessional, and graduates are expected to qualify for careers in permanent, full-scale producing companies or ensembles, whether regional or university and community based. The program is not intended for beginners. It presumes a strong humanistic background, functional experience in all the arts of theater, and previous demonstration of high artistic promise in the area of intended specialization. The long-range objective of the training program is stage innovation. It is assumed, however, that theatrical invention presupposes thorough knowledge of the history of dramatic convention, theoretical as well as practical understanding of the resources of performance as an artistic medium, and demonstrable mastery



of the techniques and instruments of stage expression. The program is not conducive to premature ingenuity, and prospective students without the stamina, determination, and patience to undergo extensive trial and preparation for performance and production should not apply. Those with restrictive interests (e.g. in improvisation or environmental staging or musical theater alone) will also be thwarted by the breadth of training required and should seek out other programs better suited to their particular needs.

The Department of Theater is housed in an elaborate new center for the performing arts with fully equipped laboratories, studios, workshops, and stages designed for all styles and types of performance. The University Library and other archives in the area hold extensive collections for production research.

Enrollment in the graduate program in Theater is restricted in order to insure the highest possible quality of training. At present, the number of openings is limited to vacancies created through graduation and attrition. Instruction is organized in academic-year units, and applications are normally considered for the fall term only.

Applicants should follow the procedures and meet the requirements for admission established by the Graduate School. In addition, a minimum cumulative grade point average of 3.0 (on a 4.0 scale) should have been earned on all previous college work. The Graduate Record Examination is required. The Miller Analogies Test may also be requested if evidence of potential success in the Theater program is in question.

All applicants must submit a complete résumé of production experiences and interview with the Graduate Committee. Those who intend to concentrate in acting and directing should be prepared to audition. Applicants who wish to concentrate in theatrical criticism, playwriting, and directing should submit appropriate critical essays. Those interested in playwriting should also offer drafts of at least two original scripts. Applicants who intend to focus their training in scenic, lighting, or costume design should submit a portfolio. Manuscripts and portfolios are returned upon request.

Completed application forms, transcripts, letters of recommendation, and examination scores should be sent directly to the Graduate Admissions Office, Graduate Research Center, University of Massachusetts, Amherst, MA 01002. All other supportive material should be sent to the Graduate Program Director, Department of Theater, Fine Arts Center, University of Massachusetts, Amherst, MA 01002.

Instruction in the program is centered in individually planned projects carried out within the framework of specialized studios and workshops, supported by directed readings in the history and theory of stage practice and by various seminars in play and production research and analysis.

The program is organized into three sequential periods of training, one for apprentices, one for journeymen, and one for masters. Admission to each successive period is by review only. Students enter the program as apprentices and train for a minimum of two semesters. It is a period of intensive trial and review structured to permit scrutiny of the student's artistic attitudes, aptitudes, and potential. Apprentices assume limited responsibilities in the public performances of the University Theater. Those permitted by review to continue in the program train as journeymen for a minimum of two consecutive semesters. Emphasis is on the student's ability to synthesize knowledge, experience,

skill, and imagination and to collaborate on team efforts. Journeymen assume more important responsibilities in the public performances of the University Theater. Those admitted by review to candidacy for the degree train as masters for a minimum of two consecutive semesters. Focus is on the confirmation of artistic skill, authority in craft and performance, and originality of expression. Masters produce a major creative work and share with the faculty and staff full responsibility for the public performances of the University Theater.

With the exception of Theater 700, Special Problems, and Theater 800, Master's Thesis, all graduate instruction in Theater is currently offered under experimental course numbers. For complete information, contact the Graduate Program Director.

**ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED**

**COURSES OPEN TO GRADUATE STUDENTS ONLY**

- 700. SPECIAL PROBLEMS.**  
Independent study in special subjects. *Credit, 1-3.*
- 741. ADVANCED SCENE DESIGN.**  
Special problems in conceiving the visual elements of theatre. Experimental design and design for atypical theatre structures emphasized.  
Prerequisite, Theater 241/541 or equivalent.
- 742. HISTORY OF THEATRICAL COSTUME I.**  
Period costumes from primitive man to the 17th century; projects in design from a number of these periods.  
Prerequisite, Theater 242/542 or equivalent.
- 743. HISTORY OF THEATRICAL COSTUME II.**  
Period costume from the 17th century to the present; projects in design from a number of these periods.  
Prerequisite, Theater 242/542 or equivalent.
- 744. ADVANCED ACTING.**  
Investigation of an experimentation with various actor-character relationships.  
Prerequisite, Theater 244/544 or equivalent.
- 745. ADVANCED DIRECTING.**  
Various styles of staging period and contemporary dramas; examination of these styles within their historical contexts.  
Prerequisite, Theater 246/546 or equivalent.
- 747. TOPICS IN THEATER HISTORY.**  
Detailed study of selected eras in the development of theater.
- 748. TOPICS IN CONTEMPORARY THEATER.**  
Distinctive 20th-century theatrical concepts in Europe and the United States.
- 756. THEATER MANAGEMENT.**  
Modern theatrical-production organization, economics, special contractual problems, and administration.
- 757. ADVANCED STAGE LIGHTING.**  
Aesthetics of stage lighting and the problems and practices of the lighting designer. Emphasis on the lighting of selected plays.  
Prerequisite, Theater 257/557 or equivalent.
- 758. THEATER PRACTICUM.**  
Conception and execution of two creative theatrical assignments selected with and supervised by the student's adviser. The number of hours varies depending on the projects. Typically, the sequence would be three hours credit for each of the M.F.A. candidate's first two semesters. *Credit, 1-6.*

## WILDLIFE AND FISHERIES BIOLOGY

### 761. CONTEMPORARY DRAMATIC THEORY AND CRITICISM.

Important theories of dramatic art from 1900 to the present. Prerequisite, Theater 261/561 or equivalent.

### 763. THEATER AND RITUAL.

Relationship of ritual and theatre from primitive man to Genet.

### 765. THE RHETORIC OF THEATER.

Theories of rhetoric and poetic as relevant to drama and (of specific approaches) to the rhetorical criticism of plays.

### 800. MASTER'S THESIS.

*Credit, 3-6.*

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS

#### 540. TECHNICAL PRODUCTION.

The materials and methods in construction for the stage. Prerequisites, Theater 115 and 140.

#### 541. PRINCIPLES OF SCENE DESIGN.

Intensive study and application of scene design principles to a series of design projects. Practical experience through laboratory work in scene painting and decoration. Prerequisites, Theater 115 and 140.

#### 542. DESIGN AND CONSTRUCTION OF COSTUME.

Silhouette, draping, color, texture, drafting of patterns, construction, and the application of these basic principles to a series of design projects. Prerequisites, Theater 115 and 140.

#### 544. ACTING II.

Character analysis and development with attention to the interrelationship of characters. Prerequisites, Theater 115 and 243.

#### 546. DIRECTING II.

Problems in the interpretation and staging of various types of contemporary drama. Attention to rehearsal and performance procedures. Prerequisite, Theater 245.

#### 547. THEATER HISTORY I.

The history of the theater in western civilization from its beginnings to 1642; an investigation of the classical, medieval, and Renaissance theaters. Emphasis on the origins and development of drama, spectacle, theater production, and theater architecture.

#### 548. THEATER HISTORY II.

History of the theater in western civilization. Emphasis on the 18th and 19th centuries, the Continental, English, American and modern theaters.

#### 551. ORAL INTERPRETATION OF CHILDREN'S LITERATURE.

Selection and interpretation of literary materials for children.

#### 552. ADVANCED ORAL INTERPRETATION OF LITERATURE.

Concentration on the philosophical and technical bases for reading the lyric poem, fiction, drama, and documentary materials. Prerequisite, Theater 152.

#### 553. CHILDREN'S DRAMA I.

Informal dramatics, without an audience, in classroom and recreation programs, serving children's need for creative outlets and furthering awareness, self-expression, self concepts, and social growth through imagination, pantomime, and improvised story dramatization.

#### 554. CHILDREN'S DRAMA II.

Formal aspects of children's theater; the selection and presentation, by adults or older young people, of suitable plays for the child audience.

## GRADUATE SCHOOL

### 557. STAGE AND TELEVISION LIGHTING.

Principles, practices, and equipment involved in stage and television lighting. Prerequisites, Theater 115 and 140.

### 561. HISTORY OF DRAMATIC THEORY.

A survey of important trends and documents in the history of dramatic theory from Plato to 1900. Prerequisite, Theater 260.

### 562. THE BLACK PRESENCE IN AMERICAN DRAMA.

Selected works by American white and black playwrights, from mid-19th century to the present.

### 564. HISTORY OF THE AMERICAN THEATER AND DRAMA.

The history of the American theater from its beginnings in the 18th century to the present. Concerned in each period with the drama itself, the building in which it is performed, scenic effects, and the contribution of actor and director.

### 660. PLAYWRITING.

The problems of translating idea into dramatic action. Prerequisite, permission of instructor.

## Wildlife and Fisheries Biology

### GRADUATE FACULTY

DONALD R. PROGULSKE, *Professor and Head of the Department of Forestry and Wildlife Management*, B.S., Massachusetts, 1950; M.S., Virginia Polytechnic Institute, 1952; Ph.D., University of Missouri, 1956.

CHARLES F. COLE, *Professor of Fisheries Biology and Graduate Program Director in Fisheries*, B.A., Cornell, 1950; Ph.D., 1957.

FREDERICK GREELEY, *Associate Professor of Wildlife Biology and Graduate Program Director in Wildlife*, B.A., Kenyon College, 1941; M.S., Wisconsin, 1949; Ph.D., 1954.

CARL A. CARLOZZI, *Associate Professor of Resource Planning*.

WENDELL E. DODGE, *Associate Professor of Wildlife Biology*, B.A., New Hampshire, 1955; M.S., Massachusetts, 1958; Ph.D., 1967.

JAMES E. JOHNSON, *Assistant Professor of Fisheries Biology*, B.S., Purdue, 1962; M.S., Butler, 1965; Ph.D., Arizona State, 1969.

JOSEPH J. KENNELLY, *Associate Professor of Wildlife Biology*, B.S., Cornell, 1958; M.S., 1960; Ph.D., 1964.

JOSEPH S. LARSON, *Professor of Wildlife Biology*, B.S., Massachusetts, 1956; M.S., 1958; Ph.D., Virginia Polytechnic Institute, 1966.

JAMES D. PARRISH, *Assistant Professor of Fisheries Biology*, B.S., South Carolina, 1956; Ph.D., Rhode Island, 1972.

ROGER J. REED, *Professor of Fisheries Biology*, B.S., Pittsburgh, 1951; M.S., 1953; Ph.D., 1956.

MICHAEL R. ROSS, *Assistant Professor of Fisheries Biology*, B.S., Miami, 1969; M.Sc., Ohio, 1971; Ph.D., 1975.

### THE DOCTOR OF PHILOSOPHY DEGREE PROGRAM IN WILDLIFE AND FISHERIES BIOLOGY

Students completing the master's degree at the University or elsewhere may be accepted into our doctoral

## UNIVERSITY OF MASSACHUSETTS

program but are formally admitted to candidacy only after the completion of a successful written and oral preliminary comprehensive examination based on concepts in general biology, ecology, fisheries and wildlife biology, and such other areas as may be stipulated by the student's Guidance Committee. Selection of courses is done by the student and his Guidance Committee and usually extends into areas beyond biology, leading the student towards competency in independent research in either fisheries or wildlife biology. A reading knowledge of one or more foreign languages sufficient to understand journal material may be required of doctoral students in certain areas of specialization. The degree normally requires three years of study beyond the master's degree.

### THE MASTER OF SCIENCE DEGREE PROGRAM IN EITHER FISHERIES BIOLOGY OR WILDLIFE BIOLOGY

Students may be accepted into the master's degree program leading to a degree either in fisheries biology or in wildlife biology. Applicants normally come from undergraduate biological backgrounds or from applied biological areas such as fisheries or wildlife. Students with backgrounds in areas tangential to the field of resource conservation may apply with the understanding that deficiencies could extend their time in the program; normally, two years are required for the completion of the master's degree. Candidates normally write theses worth 10 hours of credit and are given a final oral examination upon its completion. Occasional wildlife biology students completing a degree without a thesis must pass both a written and an oral examination. Students completing a thesis must offer in addition a minimum of 20 graduate credits, at least 6 of which must be earned in 701-800 series courses. There is no language requirement for the master's degree.

### GENERAL INFORMATION

The Forestry and Wildlife Management Department offers graduate work leading to the Master of Science degree either in wildlife or in fisheries biology and the Doctor of Philosophy in wildlife and fisheries biology. Staff and facilities are available for supporting research in upland and wetland avian biology, mammalian biology and management; and estuarine, anadromous, and warmwater fisheries research as well as in the broader areas of natural resource management. Graduate training is required for professional entrance into state, federal, and private employment in resource management and into teaching positions stressing applied ecological principles in both secondary and college-level programs. Most applicants come from biological backgrounds as undergraduates; occasional exceptions can be made, with the provision that deficiencies be made up. Applicants are encouraged to correspond with the Graduate Program Director in the Department for answers to specific questions, but all application materials should be sent directly to the Graduate School; scores from the Graduate Record Examination, including the Advanced Biology, must accompany all applications. The application must clearly indicate whether the candidate wishes to enter the wildlife biology or the fisheries biology degree program. Research support at both the master's and doctoral level is frequently available either from grants to individual faculty members or through support provided by the Cooperative

## WILDLIFE AND FISHERIES BIOLOGY

Wildlife and Fishery Units; this latter support is provided by the Massachusetts Division of Fisheries and Game, the Massachusetts Division of Marine Fisheries, the United States Bureau of Sport Fisheries and Wildlife, and the Wildlife Management Institute. Undergraduates receiving wildlife or fisheries degrees from the University of Massachusetts are strongly urged to apply to other universities in order to vary their professional training.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY (For either major or minor credit)

700. SPECIAL PROBLEMS IN WILDLIFE OR FISHERIES BIOLOGY.

Credit, 3 per semester; maximum credit, 6.

701, 702. SEMINAR IN WILDLIFE AND/OR FISHERIES BIOLOGY.

Review and discussion of the literature, including such subjects as population dynamics and manipulation, fish and game law and administration, Afro-Eurasian problems, influence of land-use, and Arctic environments.

Credit, 1-3 per semester; maximum credit, 6.

712. SHIPBOARD OCEANOGRAPHIC OPERATIONS.

The planning and execution of an integrated research training cruise on board a research vessel. Familiarizes students with standard oceanographic procedures and normal shipboard equipment and its use.

Prerequisite, graduate status in a basic or applied science related to the sea. One two-hour class per week and a 3-5 day training cruise (also listed as Marine Sci 712).

Mr. C. F. Cole.

745. DYNAMICS OF EXPLOITED FISH POPULATIONS. The development and manipulation of mathematical models of fish stocks to demonstrate sustained yield principles.

Two one-hour lectures and one two-hour discussion-practice session.

Prerequisite, permission of instructor. Mr. C. F. Cole.

756. FISHERIES BIOMETRICS.

The statistical treatment of fisheries research problems, including studies on age and growth, food habits, population estimates, condition factors, and population dynamics.

Prerequisites, Fish Biol 565 and Stat 121 or permission of instructor.

757. ADVANCED FISHERIES MANAGEMENT.

Scientific basis for modern fisheries management, emphasizing coldwater fishes, anadromous species, large reservoir and river fisheries, and conflicts of interest with other water uses.

Prerequisites, Fish Biol 565 and 756, or permission of instructor.

758. ADVANCED WILDLIFE MANAGEMENT.

Interrelationships of wildlife and forestry, grazing, cultivation, pollution, and other uses of natural resources.

800. MASTER'S THESIS.

Credit, 6-10.

900. DOCTORAL DISSERTATION.

Credit, 18.

#### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

561. PRINCIPLES OF WILDLIFE BIOLOGY.

Fundamental ecology and principles of wildlife management, with emphasis on population characteristics and responses.

Lecture only, for non-majors. Credit, 2. Mr. Greeley.

Lecture and laboratory, for majors. Credit, 3. Mr. Greeley.



## ZOOLOGY

562. **TECHNIQUES OF WILDLIFE BIOLOGY.**  
Methods of collecting and interpreting data in wildlife management, with emphasis on field and laboratory experience in census methods and criteria for determining sex, age, and other characteristics of wild birds and mammals.  
Prerequisites, one course in Statistics and Wild Biol 561 or permission of instructor.  
Mr. Larson.

563. **MANAGEMENT OF WETLAND WILDLIFE.**  
The origin and distribution of wetlands in North America; identification and habitat requirements of wetland wildlife; public and private management of wetland environments.  
Prerequisites, Wild Biol 561 or permission of instructor.  
Mr. Larson.

564. **MANAGEMENT OF UPLAND WILDLIFE.**  
Life histories, identification, and habitat requirements of upland game birds, game mammals, and furbearers; management of upland habitats.  
Mr. Greeley.

565. **TECHNIQUES OF FISHERIES BIOLOGY.**  
Principles and techniques of fishery management, stressing population and growth dynamics, and field procedures.

567. **LABORATORY IN PRINCIPLES OF FISHERY BIOLOGY.**  
Field techniques in fishery biology; operation and use of fishery research and management equipment. Laboratory analysis of field-collected data using automatic data processing; manuscript preparation.  
Corequisite, Fish Biol 565.  
One 4-hour laboratory.  
Credit, 1.

570. **ECOLOGY OF FISHES.**  
Biological responses of fishes to the environment. Aspects of feeding, home range, breeding behavior, and other responses to the environment.  
Prerequisites, Fish Biol 565 and Zool 602 or permission of instructor.

572. **INTRODUCTION TO MARINE FISHERIES.**  
Factors affecting world marine fisheries resources and development. Review of selected species of commercial importance and of selected world fisheries. Several overnight field trips requiring Saturday attendance by arrangement.  
Prerequisites, Fish Biol 565 and Zool 600 or permission of instructor.  
Mr. C. F. Cole.

## Zoology

### GRADUATE FACULTY

JOHN D. PALMER, *Professor and Chairman of the Department of Zoology*, B.A., Lake Forest, 1957; M.S., Northwestern, 1959; Ph.D., 1962.

STUART D. LUDLAM, *Associate Professor and Graduate Program Director*, B.A., Cornell, 1960; Ph.D., 1964.

LAWRENCE M. BARTLETT, *Professor*, B.S., Massachusetts, 1939; M.S. 1942; Ph.D., Cornell, 1949.

MARGERY C. COOMBS, *Assistant Professor*, B.A., Oberlin College, 1967; M.A., Columbia, 1968; Ph.D., 1973.

VINCENT G. DETHIER, *Gilbert L. Woodside Professor*, A.B., Harvard, 1936; A.M., 1937; Ph.D., 1939.

D. CRAIG EDWARDS, *Associate Professor*, B.S., Swarthmore, 1961; Ph.D., Chicago, 1965.

BRONISLAW M. HONIGBERG, *Professor*, B.A., California at Berkeley, 1943; M.A., 1946; Ph.D., 1950.

MINDAUGAS S. KAULENAS, *Associate Professor*, B.Sc., University of London, 1961; Ph.D., 1964.

DAVID J. KLINGENER, *Associate Professor*, B.A., Swarthmore, 1959; A.M., Michigan, 1961; Ph.D., 1964.

## GRADUATE SCHOOL

JOSEPH G. KUNKEL, *Associate Professor*, B.A., Columbia, 1964; Ph.D., Case Western Reserve, 1968.

BRUCE R. LEVIN, *Associate Professor*, B.S., University of Michigan, 1963; M.S., 1964; Ph.D., 1967.

BRADFORD C. LISTER, *Donald Fairbairn Visiting Professor*, B.A., Tufts, 1969; Ph.D., Princeton, 1974.

ARTHUR P. MANGE, *Associate Professor*, B.S., Cornell, 1954; Wisconsin, 1958; Ph.D., 1963.

JOHN G. MONER, *Professor*, Johns Hopkins, 1949; M.A., Princeton, 1951; Ph.D., 1953.

DREW M. NODEN, *Assistant Professor*, B.A., Washington and Jefferson; Ph.D., Washington, 1972.

MELINDA A. NOVAK, *Assistant Professor of Psychology*.

WILLIAM B. NUTTING, *Professor*, B.S., Massachusetts, 1940; M.S., 1948; Ph.D., Cornell, 1950.

W. BRIAN O'CONNOR, *Associate Professor*, B.S., St. Michael's, 1962; M.S., Purdue, 1966; Ph.D., 1967.

HERBERT E. POTSWALD, *Associate Professor*, B.A., University of Minnesota, 1959; Ph.D., University of Washington, 1964.

HAROLD RAUCH, *Professor*, B.S., Queens College, 1944; M.S., Illinois, 1947; Ph.D., Brown, 1950.

JOHN L. ROBERTS, *Professor*, B.S., Wisconsin, 1947; M.S., 1948; Ph.D., California at Los Angeles, 1952.

LARRY S. ROBERTS, *Professor*, B.S., Southern Methodist, 1956; M.S., Illinois, 1958; D.Sc., Johns Hopkins, 1961.

H. DUNCAN ROLLASON, JR., *Professor*, B.A., Middlebury, 1939; M.A., Williams, 1941; M.A., Harvard, 1943; Ph.D., 1949.

THEODORE D. SARGENT, *Professor*, B.S., Massachusetts, 1958; M.S., Wisconsin, 1960; Ph.D., 1963.

DENNIS G. SEARCY, *Assistant Professor*, B.S., Oregon State, 1964; Ph.D., California at Los Angeles, 1968.

JAMES G. SNEDECOR, *Professor*, B.S., Iowa State, 1939; Ph.D., Indiana University, 1947.

DANA P. SNYDER, *Associate Professor*, B.S., Illinois, 1947; M.S., 1948; Ph.D., Michigan, 1951.

ALASTAIR M. STUART, *Professor*, B.Sc., Glasgow, 1953; Ph.D., Harvard, 1961.

CHRISTOPHER L. F. WOODCOCK, *Associate Professor*, B.Sc., University College, London, 1963; Ph.D., 1966.

GORDON A. WYSE, *Associate Professor*, B.S., Swarthmore, 1961; M.S., University of Michigan, 1963; Ph.D., 1967.

The Department of Zoology offers the Master of Science and Doctor of Philosophy degrees. The following major fields are represented in the department: Animal Behavior, Biochemical Zoology, Cytology (including fine structure), Developmental Biology, Ecology, Genetics, Invertebrate Zoology, Limnology, Parasitology, Physiology, Population Biology, Vertebrate Paleontology, and Vertebrate Zoology.

Applicants for admission to the advanced degree programs should have a bachelor's degree, have had at least 10 credit hours in biology and normally have been in the upper 20% of their class in college. A recommended undergraduate curriculum would include courses in comparative anatomy, embryology, genetics, invertebrate zoology, physiology, mathematics

## UNIVERSITY OF MASSACHUSETTS

## ZOOLOGY

(through elementary calculus), physics, organic chemistry, and either French, German or Russian.

Applicants who already have a Master's degree equivalent to our own may be accepted for entry into the Ph.D. program. All applicants should submit Graduate Record Examination scores to the Graduate School.

Requests for further information about the graduate program should be directed to the Department of Zoology.

### ADVANCED DEGREES

#### I. FOR STUDENTS ENTERING WITH A BACHELOR'S DEGREE AS THEIR HIGHEST DEGREE, THE FOLLOWING REQUIREMENTS MUST BE MET:

##### A. REQUIREMENTS COMMON TO BOTH THE M.S. AND Ph.D. DEGREES.

1) All students must demonstrate a proficiency in six areas of zoology (Cell Biology; Developmental Biology; Ecology and Behavior; Genetics and Evolution; Morphology and Systematics; Physiology) by successfully accumulating nine points out of 12 in a Qualifying Examination given each semester during their first two years (if a Master's candidate), or in the case of those wishing to proceed to the Ph.D. normally during their first one and a half years.

2) All students must enroll in the Zoology 850 seminar and obtain a minimum average of one credit per year of residence, or until a total of four credits has been acquired.

3) Teaching is regarded as an important part of graduate training, and all students are required to teach half-time for two semesters, unless equivalent experience has been obtained previously at another institution.

4) A foreign language requirement must be met. The normal languages are French, German and Russian. For the M.S. one language passed at the intermediate level, and for the Ph.D. one language passed at the advanced level or two languages passed at the intermediate level are acceptable. Foreign students whose native language is not English may meet the requirement for the Ph.D. by passing one language at the intermediate level.

##### B. REQUIREMENTS FOR THE M.S.

1) All requirements under "A" above.

2) EITHER:

(i) Acceptance of a thesis containing original research (Zoology 800, 10 credits); 20 graduate credits, at least 6 of which must be earned in the 700-900 series in Zoology (or in courses approved for major credit in Zoology) excluding Zoology 700, 800 and 850.

(ii) A program of original research under one supervisor, but without the preparation of a thesis. This program will consist of 9 credits of Zoology 700, Special Problems. In addition, 21 graduate credits must be taken, at least 6 of which must be earned in the 700-900 series in Zoology (or in courses approved for major credit in Zoology) excluding Zoology 700, 800 and 850.

(iii) Three credits of Zoology 700, Special Problems, to be completed in one semester; 29 additional grad-

uate credits must be taken with at least 12 being from the 700-900 series in Zoology (or in courses approved for major credit in Zoology) excluding Zoology 700, 800 and 850.

3) The passing of a final examination.

##### C. REQUIREMENTS FOR THE Ph.D.

1) All requirements under "A" above.

2) The passing of an Oral Preliminary Examination demonstrating advanced knowledge of one major and two minor fields selected from the following: Animal Behavior, Cell Physiology and Biochemistry, Developmental Biology, Ecology, Parasitology, Physiology, Systematics and Evolution. Equivalent work in another department may be substituted as one minor area; this requires the consent of the student's guidance committee and the Departmental Graduate Operations Committee. Note: the Graduate School requires that the departmental language requirement must be met before the Preliminary Examination can be taken.

3) The preparation of a thesis with original research.

4) The passing of a final examination.

#### II. FOR STUDENTS ENTERING WITH A MASTER'S DEGREE, THE FOLLOWING REQUIREMENTS MUST BE MET:

##### A. Requirements for the Ph.D.

1) All requirements under I-A above except I-A (1), the passing of a qualifying examination.

2) Acceptance by a faculty member willing to act as a supervisor.

3) The passing of a preliminary examination (see C-2 above).

4) The preparation of a thesis containing original research.

5) The passing of a final examination.

III. A more detailed account of the requirements for the advanced degrees, the qualifying examination, and a timetable (regarded as a standard for "reasonable and satisfactory progress") are given in a Departmental booklet: "Academic Policies Concerning Graduate Programs". This is sent to all incoming students and together with the above, and the Graduate School rules delineates the requirements for the degrees.

### ALL COURSES CARRY 3 CREDITS UNLESS OTHERWISE SPECIFIED

#### COURSES OPEN TO GRADUATE STUDENTS ONLY

(For either major or minor credit)

##### 700. SPECIAL PROBLEMS.

*Credit, 1-9.*

##### 702. GENERAL CYTOLOGY

The morphological features of cells in relation to their function. Lectures, seminar reports and individual laboratory work.

Offered spring semester.

Prerequisite, Zool 523.

##### 707. BIOLOGICAL STRUCTURE ANALYSIS.

A practical approach to methods for studying biological structures above the molecular level. Lectures, discussions, and laboratory experiments and demonstrations cover light and electron microscopy, X-ray diffraction, and related techniques.

Offered spring semester.

Prerequisite, permission of instructor.

Mr. Woodcock.

## ZOOLOGY

## GRADUATE SCHOOL

### 708. ELECTRON MICROSCOPY.

A practical approach to the electron microscopy of biological specimens in which each student will undertake a lab project. Basic theory will be presented in lecture sessions. Offered fall semester.

Prerequisite, permission of instructor. Mr. Woodcock.

### 710. FINE STRUCTURE AND FUNCTION OF CELLS.

Lectures, discussions, reading, and reports on fine structure of cells and dynamic morphology. Offered spring semester.

Prerequisites, Zool 523, 660. Mr. Woodcock.

### 720. EXPERIMENTAL EMBRYOLOGY.

Lectures and discussions on the casual analysis of animal development. Laboratory on *in vivo* and *in vitro* culture methods. Offered fall semester.

Prerequisites, Zool 680 or 527. Mr. Noden.

### 724. ADVANCED DEVELOPMENTAL BIOLOGY.

Molecular basis of cell and tissue differentiation. Emphasis on gene action, synthesis and function of macromolecules, and hormonal control of developmental processes. Offered spring semester.

Prerequisites, Biochem 523 or Zool 660; Zool 540. Mr. Kaulenas.

### 730. PHYSIOLOGICAL GENETICS.

The nature of the gene and its action in the developmental and physiological processes of the organism. Offered spring semester.

Prerequisites, Zool 540 and permission of instructor. Mr. Kaulenas, Mr. Rauch.

### 740. ADVANCED INVERTEBRATE ZOOLOGY.

Continuation of Zoology 582. Emphasis on development. Offered spring semester.

Prerequisite, Zool 582. Mr. Potswald.

### 744. METAZOAN SYMBIOSIS.

Host-symbiont relationships of mutuals, commensals, and parasites. Systematics, morphology, life histories, and physiology of metazoan symbionts of animals. Laboratory on research techniques. Offered fall semester.

Prerequisites, a course in invertebrate zoology or parasitology; permission of instructor. Mr. L.S. Roberts.

### 750. SELECTED TOPICS IN ANIMAL BEHAVIOR.

Topics selected from active areas of current research (e.g., communication, development, systems analysis, sociobiology) with an emphasis on critical analyses of theory and methodology. Three hours lecture-discussion-reports. Offered spring semester.

Prerequisite, Zool 650, or permission of instructor. Mr. Sargent, Mr. Stuart.

### 751. BIOLOGY OF ANIMAL POPULATIONS.

Organization and process in the local population. The viewpoint is holistic, emphasizing the population as an integrated functional unit of life. Extensive student participation in discussion and presentation of critiques of current concepts. Offered fall semester.

Prerequisites, Zool 757 and either 546, 650, or 755; or equivalent background; permission of instructor. Mr. Snyder.

### 755. SYSTEMATICS AND EVOLUTIONARY MECHANISMS.

A theoretical consideration of evolution and systematics at and above the species level. Offered fall semester.

Prerequisite, Zool 540. Mr. Klingener.

### 757. POPULATION AND COMMUNITY ECOLOGY.

Distribution patterns of organisms, population growth and regulation, interspecific competition and other population interactions, and community structure and energetics. Sampling methods, use of models, individual and group projects in the laboratory. Two hours lecture-discussion, one laboratory. Offered spring semester.

Prerequisites, one course each in ecology, invertebrate zoology, Math 124; statistics desirable. Mr. Edwards.

Prerequisites, one course each in ecology, invertebrate zoology, Math 124; statistics desirable. Mr. Edwards.

Prerequisites, one course each in ecology, invertebrate zoology, Math 124; statistics desirable. Mr. Edwards.

Prerequisites, one course each in ecology, invertebrate zoology, Math 124; statistics desirable. Mr. Edwards.

### 770. COMPARATIVE NEUROPHYSIOLOGY.

Sensory and nervous function in invertebrates and vertebrates. Emphasis on integrative mechanisms underlying animal behavior. Offered fall semester.

Prerequisites, a year of chemistry and physics, and cell physiology or physiological psychology; or permission of instructor. Credit, 3. Mr. Wyse.

### 780. PHYSIOLOGICAL REGULATORY MECHANISMS.

Physiological regulation and its basis in cells and organisms. Prerequisite, Zool 660 or equivalent.

Credit, 2-4 per semester.

Mr. J. L. Roberts, Mr. Moner.

### 784. ENDOCRINOLOGY.

The importance of the endocrines in their control over normal functions (growth, metabolism, reproduction, etc.) in a variety of animals. Two class hours, one 3-hour laboratory period. Offered spring semester.

Prerequisite, Zool 666. Mr. Snedecor.

### 790. WRITING FOR THE LIFE SCIENCES.

Principles and techniques of scientific writing for students in the life sciences whose researches are well advanced. Offered spring semester.

Prerequisite, permission of instructor. Staff.

### 810. TOPICS IN ZOOLOGY.

One or more topics of special or current interest covered in lectures and discussion. Credit, 1-6 per semester.

### 850. SEMINAR.

Each semester a topic from each of the following areas is chosen for discussion: cytology, genetics, and developmental biology; physiology and biochemistry; environmental and systematic biology. Credit, 1 per semester.

### 800. MASTER'S THESIS.

Credit, 10.

### 900. DOCTORAL DISSERTATION.

Credit, 10.

### COURSES OPEN TO BOTH GRADUATE AND UNDERGRADUATE STUDENTS (For either major or minor credit)

### 521. COMPARATIVE VERTEBRATE ANATOMY.

Structure and phylogeny of vertebrates. Laboratory work illustrating evolutionary trends and specializations. Experience in dissection. Two class hours, one 3-hour laboratory period.

Prerequisite, Zool 101 or 540. Mrs. Coombs, Mr. Klingener.

### 523. HISTOLOGY.

Structure of cells, tissues and organs as related to function, with emphasis on the mammal; introduction to microtechnique. Two class hours, one 3-hour laboratory period.

Prerequisite, Zool 101 or 540. Mr. Potswald, Mrs. Rollason.

### 527. EMBRYOLOGY.

A survey of embryonic development combining descriptive and analytical approaches. Developmental concepts and mechanisms are emphasized. Laboratories cover both descriptive and experimental embryology, utilizing living organisms whenever possible. Offered spring semester.

Two class hours, one 3-hour laboratory period. Prerequisite, Zool 101 or 540. Mr. Noden.



## UNIVERSITY OF MASSACHUSETTS

## ZOOLOGY

### 530. SYSTEMS OF THE HUMAN BODY.

Lectures on human anatomy and physiology, based on an integrated discussion of systems of the body. Laboratories emphasize the functional properties of the human organism; supplemental exercises in gross anatomy of the cat and rat. For students in Medical Technology and Public Health. A limited number of students in the engineering and physical science fields allowed by permission of instructor.

Three class hours, one 3-hour laboratory period.  
Offered spring semester.

Prerequisites, Chem 111, 112; Zool 101, 223 (or 223 concurrently). Credit, 4. Mr. O'Connor

### 540. PRINCIPLES OF GENETICS.

Mechanisms of heredity in plants and animals, emphasizing transmission and action of genes, population genetics, and evolution.

Prerequisites, Chem 111 and one semester of biological science. Mr. Levin, Mr. Mange, Mr. Rauch.

### 543. INTRODUCTORY POPULATION BIOLOGY

An evolutionary and integrated introduction to the demographic, ecological, genetic, and geographic aspects of the biology of populations. Consideration of social implications and utility. Background in probability theory, statistics, and mathematical and numerical modelling is presented.

Prerequisites, Zool 145 or 540 or equivalent, and 1 semester of mathematics.

Two class hours and one 2-hour period for discussion and problem solving. Mr. Levin.

### 546. POPULATION GENETICS.

The causes of evolution, emphasizing genetical, ecological, and behavioral aspects. Some problems approached through mathematical models, stressing their biological implications. Offered fall semester.

Prerequisites, Zool 540 and Math 123 or 135; and permission of instructor.

### 550. MATHEMATICAL IDEAS IN BIOLOGY.

An introduction to some biological problems using mathematical concepts and techniques as tools. Emphasis on biology; topics are introduced at an elementary level. They include "thinking" machines and artificial intelligence, energetics and locomotion of animals, and elementary models for populations. Intended for biologists, pre-meds, biophysicists, and mathematicians.

Prerequisite, Zool 551 and 552 concurrently or equivalent background.

### 551. BIOLOGY REVIEW FOR ZOOLOGY 550.

A survey of basic aspects of cytology, life cycles, anatomy, genetics, behavior, and populations. Concurrent registration in Zool 550 required. Intended for students with an adequate mathematical background but weak in biology.

### 552. MATHEMATICS REVIEW FOR ZOOLOGY 550.

A survey of basic aspects of sets, functions, derivation and integration, qualitative study of difference and differential equations. Concurrent registration in Zool 550 is required. Intended for students with an adequate biological background but weak in mathematics.

### 575. BIOLOGY OF PROTOZOA

Morphology and physiology of Protozoa; the contributions made to basic problems of biology through studies of these organisms. Lectures, readings, laboratory demonstrations and exercises. Exact format varies from year to year. Total, 5 hours lecture and laboratories.

Offered spring semester.

Prerequisites, Chem 262 and 264.

Mr. Honigberg.

### 581. BIOLOGY OF LOWER INVERTEBRATES

Survey of invertebrate animals based on evolutionary and phylogenetic considerations. Ecological roles and physiological functions of the various groups are stressed. Includes the Protozoa, Porifera, Cnidaria, Platyhelminthes, Nematoda, Mollusca, etc.

Two class hours, one 3-hour laboratory.

Offered spring semester.

Prerequisites, Zool 101 or 540.

Mr. Nutting, Mr. L. S. Roberts.

### 582. BIOLOGY OF HIGHER INVERTEBRATES.

Survey of invertebrate animals based on evolutionary and phylogenetic considerations. Ecological roles and physiological functions of the various groups are stressed. Includes the Annelida, Arthropoda, Ectopoda, Echinodermata, etc.

Two class hours, one 3-hour laboratory.

Offered fall semester

Prerequisites, Zool 101 or 540.

Mr. Nutting, Mr. L. S. Roberts.

### 583. GENERAL PARASITOLOGY

Morphology, life cycles, and physiology of protozoan and helminth parasites. Emphasis on broad aspects of parasitism.

Two class hours, one 3-hour laboratory period.

Offered fall semester.

Prerequisites, Zool 101 or 540; Chem 112 or 114

Mr. Honigberg.

### 600. VERTEBRATE ZOOLOGY.

History, relationships, patterns of distribution, classification of vertebrates with emphasis on fishes.

One class hour, two 2-hour laboratory periods, field trips.

Offered fall semester.

Prerequisite, Zool 101 or 540.

Mr. Andrews

### 602. ICHTHYOLOGY

Morphology, ecology, and relationships of fishes, and their distribution in space and time.

Two class hours, one 3-hour laboratory period.

Prerequisite, Zool 521 or 600

Mr. Andrews.

### 606. ORNITHOLOGY

Avian biology including structural and functional adaptations; emphasis on behavioral patterns. Laboratory includes field trips.

Two class hours, one 3-hour laboratory period.

Offered spring semester

Prerequisite, Zool 521 or 600. Mr. Bartlett, Mr. Sargent.

### 608. MAMMALOLOGY

Evolution, distribution, classification and ecology of mammals. Laboratory includes identification of local fauna and selected ecological techniques.

Two class hours, one 3-hour laboratory period

Offered spring semester.

Prerequisites, Zool 521 or 600.

Mr. Snyder

### 635. LIMNOLOGY

The physical, chemical, and biological aspects of inland waters.

Two class hours, one 3-hour laboratory or field trip.

Offered spring semester.

Prerequisites, Bot 100, Zool 101, Chem 112, and Phys 103

Mr. Ludlam

### 637. ECOLOGY

A rigorous and comprehensive survey of modern ecology. Topics covered are: energy and nutrient budgets, community ecology, species diversity, population growth and regulation, and species interactions. Both theoretical and experimental examples are presented.

Two class hours, and one 3-hour laboratory period (field trips and experimentation).

Offered fall semester

Prerequisites, Introductory zoology, genetics, introductory calculus, and an invertebrate or vertebrate zoology course, or permission of instructor.

### 650. ANIMAL BEHAVIOR.

The biological bases of animal behavior, with an analysis of the methods and objectives of current research.

Three class hours.

Offered fall semester.

Prerequisites, Zool 101 or 540 and Psych 101; or Psych 215; or permission of instructor.

Mr. Sargent, Mr. Stuart

### 660. CELL PHYSIOLOGY

The structure and function of cells. Emphasis on membrane systems, including active transport, nucleic acid and protein

synthesis, and the mechanisms involved in the control of cellular processes.

Two class hours, one 3-hour laboratory period.  
Prerequisites, one year of biology and Biochem 223 or equivalent. Mr. Kaulenas, Mr. Kunkel, Mr. Moner, Mr. Searcy.

#### 666. VERTEBRATE PHYSIOLOGY.

Function of organs and organ systems in vertebrates.  
Three class hours, one 3-hour laboratory period.  
Offered fall semester.  
Prerequisite, Zool 660 or Chem 520 or 523. Mr. Snedecor.

#### 670. COMPARATIVE PHYSIOLOGY.

Physiological principles involved in adaptations of animals to their environment; emphasis in the laboratory on experimental methods used to study adaptive mechanisms.  
Three class hours, one 3-hour laboratory period.  
Offered spring semester.  
Prerequisite, Zool 660. Mr. J. L. Roberts.

#### 680. DEVELOPMENTAL BIOLOGY.

Lectures emphasize physiological and biochemical aspects of development. Laboratory period used for demonstrations, discussions, and literature reviews, as well as for experimental work.  
Two class hours, one 3-hour laboratory period.  
Prerequisite, Zool 660. Mr. Kaulenas, Mr. Kunkel.

#### PARTIAL LIST OF COURSES IN OTHER DEPARTMENTS WHICH MAY BE TAKEN FOR MAJOR CREDIT

AN SCI 706. QUANTITATIVE INHERITANCE AND SELECTION.

AN SCI 724. ADVANCED AVIAN PHYSIOLOGY.

AN SCI 725. MAMMALIAN REPRODUCTION.

BOTANY 711, 712. ADVANCED PLANT PHYSIOLOGY.

BOTANY 721. ADVANCED PLANT ECOLOGY.

BIOCHEM 729. ENZYMES.

ENT 611. INSECT BEHAVIOR.

MICROBIOL 710. ADVANCED IMMUNOLOGY.

MICROBIOL 720. MAMMALIAN VIROLOGY.

MICROBIOL 770. MICROBIAL GENETICS.

AN SCI 621. PHYSIOLOGY OF REPRODUCTION.

BOTANY 521. PLANT ECOLOGY.

BOTANY 611. CYTOLOGY.

BIOCHEM 524. GENERAL BIOCHEMISTRY.

CHEM 544. RADIOCHEMISTRY.

CHEM 581, 582. ELEMENTARY PHYSICAL CHEMISTRY.

GEOL 540. INVERTEBRATE PALEONTOLOGY.

MICROBIOL 550. GENERAL MICROBIOLOGY.

MICROBIOL 610. IMMUNOLOGY.

MICROBIOL 620. VIROLOGY.

PSYCH 550. PHYSIOLOGICAL PSYCHOLOGY.

## Faculty Emeriti

### AGRICULTURAL AND FOOD ECONOMICS

FAYETTE HINDS BRANCH, *Extension Professor Emeritus of Agricultural Economics and Farm Management.*

ADRIAN HERVE LINDSEY, *Professor Emeritus of Agricultural Economics and Head Emeritus of the Department of Agricultural Economics and Farm Management.*

DAVID ROZMAN, *Research Professor Emeritus.*

RUTH EVELYN SHERBURNE, *Instructor Emeritus.*

### ANIMAL SCIENCE

KENNETH BULLIS, *Professor Emeritus (1961).*

FRED P. JEFFREY, *Professor Emeritus (1971).*

HENRY VAN ROEKEL, *Professor Emeritus (1965).*

### BUSINESS ADMINISTRATION

HAROLD E. HARDY, *Professor Emeritus of Marketing.*

HENRY BENJAMIN KIRSHEN, *Dean Emeritus of the School of Business Administration.*

RUDOLPH HAROLD KYLER, *Associate Professor Emeritus of Business Administration.*

### CHEMICAL ENGINEERING

HANS C. DUUS, *Professor Emeritus*

### CHEMISTRY

EMMETT BENNETT, *Professor Emeritus.*

### CIVIL ENGINEERING

ELMER C. OSGOOD, *Professor Emeritus (1973).*

### EDUCATION

ALBERT WILLIAM PURVIS, *Dean Emeritus (1967).*

### ELECTRICAL ENGINEERING

JOSEPH W. LANGFORD, *Professor Emeritus (1972).*

### ENGLISH

ELLSWORTH BARNARD, *Professor Emeritus (1973).*

MARIE CAMPBELL, *Professor Emeritus (1973).*

H. LELAND VARLEY, *Professor Emeritus (1973).*

### ENTOMOLOGY

CHARLES P. ALEXANDER, *Professor Emeritus (1959).*

## UNIVERSITY OF MASSACHUSETTS

FRANK R. SHAW, *Professor Emeritus* (1970).

MARION E. SMITH, *Associate Professor Emeritus* (1971).

HARVEY L. SWEETMAN, *Professor Emeritus* (1966).

ELLSWORTH H. WHEELER, *Professor Emeritus* (1969).

### FOOD AND AGRICULTURAL ENGINEERING

GERALD A. FITZGERALD, *Professor Emeritus* (1970).

### FOOD SCIENCE AND TECHNOLOGY

ARTHUR S. LEVINE, *Professor Emeritus* (1968).

### FORESTRY AND WOOD TECHNOLOGY

J. HARRY RICH, *Professor Emeritus of Forestry* (1958).

### FRENCH

STOWELL C. GODING, *Professor Emeritus*.

### GERMANIC LANGUAGES AND LITERATURES

FREDERICK C. ELLERT, *Professor Emeritus* (1970).

### HISTORY

THEODORE C. CALDWELL, *Professor Emeritus* (1970).

HAROLD CARY, *Professor Emeritus* (1969).

### HOME ECONOMICS

GLADYS MAE COOK, *Associate Professor Emeritus* (1968).

MAY ESTELLA FOLEY, *Extension Professor Emeritus*.

BARBARA HIGGINS, *Extension Professor Emeritus* (1968).

N. MAY LARSON, *Extension Professor Emeritus*.

MARY E. LOJNIN, *Associate Professor Emeritus* (1969).

H. RUTH MCINTIRE, *Professor Emeritus*.

HELEN SWIFT MITCHELL, *Dean Emeritus of the School of Home Economics* (1960).

ANNE WILLIAMS WERTZ, *Commonwealth Professor Emeritus of Research* (1963).

### PHILOSOPHY

ROGER W. HOLMES, *Mary Lyon Professor Emeritus* (1971) (Mount Holyoke College).

ALICE A. LAZEROWITZ, *Sophia and Austin Smith Professor Emeritus* (1972) (Smith College).

MORRIS LAZEROWITZ, *Sophia and Austin Smith Professor Emeritus* (1973) (Smith College).

CLARENCE SHULTE, *Professor Emeritus* (1971).

### PLANT PATHOLOGY

WAITER M. BANFIELD, *Professor Emeritus* (1972).

EMIL FREDERICK GUBA, *Commonwealth Professor Emeritus*.

LINUS HALE JONES, *Assistant Research Professor Emeritus*.

MALCOLM A. MCKENZIE, *Professor and Director, Shade Tree Laboratory Emeritus* (1973).

### PLANT AND SOIL SCIENCES

JOHN S. BAILEY, *Professor Emeritus* (1964).

ARTHUR P. FRENCH, *Professor Emeritus* (1961).

GRANT B. SNYDER, *Professor Emeritus* (1963).

CLARK L. THAYER, *Professor Emeritus* (1957).

WILBUR H. THIES, *Professor Emeritus* (1955).

HAROLD E. WHITE, *Professor Emeritus* (1963).

### SLAVIC LANGUAGES AND LITERATURE

ARON PRESSMAN, *Professor Emeritus*.

### WILDLIFE AND FISHERIES BIOLOGY

WILLIAM G. SHELDON, *Leader Emeritus of Cooperative Wildlife Research Unit* (1972).

REUBEN E. TRIPPENSEE, *Professor Emeritus of Wildlife Management* (1960).

## Associated Five-College Graduate Faculty

E. JEFFERSON MURPHY, *Five-College Coordinator*, A.B., Amherst University, 1948; M.A., 1949; Ph.D., University of Connecticut, 1973.

BRUCE B. BENSON, *Professor of Physics*, B.A., Amherst, 1943; M.S., Yale, 1945; Ph.D., 1947.

## Amherst College

HUGH J. J. AITKEN, *Professor of Economics*, M.A., St. Andrews University, Scotland, 1943; M.A., University of Toronto, Canada, 1948; Ph.D., Harvard, 1951.

LAWRENCE A. BABB, *Associate Professor of Anthropology and Sociology*, B.A., University of Michigan, 1963; M.A., University of Rochester, 1965; Ph.D., 1969.

NORMAN BIRNBAUM, *Professor of Sociology*, A.B., Williams, 1947; M.A., Harvard, 1951; M.A., Oxford, England, 1960; Ph.D., Harvard, 1958.

GERALD P. BROPHY, *Professor of Geology*, A.B., Columbia, 1951; M.A., 1953; Ph.D., 1954.

LINCOLN P. BROWER, *Professor of Biology*, A.B., Princeton, 1953; Ph.D., Yale, 1957.



## GRADUATE SCHOOL

ASA J. DAVIS, *Professor of History and Black Studies*, B.A., Wilberforce University, 1948; S.T.B., Harvard, 1951; S.T.M., 1952; Ph.D., 1960.

COLBY W. DEMPSEY, *Professor of Physics*, B.A., Oberlin, 1952; M.A., Rice, 1955; Ph.D., 1957.

JAN EMIL DIZARD, *Associate Professor of Sociology*, B.A., University of Minnesota, M.A., 1964; Ph.D., University of Chicago, 1967.

JOSEPH EPSTEIN, *Professor of Philosophy*, B.S.S., City College of New York, 1939; M.A., Amherst, 1961; Ph.D., Columbia, 1951.

RICHARD D. FINK, *Professor of Chemistry*, A.B., Harvard, 1958; Ph.D., Massachusetts Institute of Technology, 1962.

STUART GORDON FISHER, *Assistant Professor of Biology*, B.S., Wake Forest, 1965; M.A., 1967; Ph.D., Dartmouth, 1970.

RICHARD M. FOOSE, *Professor of Geology*, B.S., Franklin and Marshall, 1937; M.S., Northwestern, 1939; Ph.D., Johns Hopkins, 1942.

PROSSER T. GIFFORD, *Professor of History*, B.A., Yale College, 1951; B.A., Oxford University, 1953; LL.B., Harvard University, 1956; Ph.D., Yale University, 1964.

ELMO GIORDANETTI, *Professor of Romance Languages*, B.A., Bowdoin, 1951; M.A., Princeton, 1954; Ph.D., 1959.

WALTER GODCHAUX III, *Assistant Professor of Biology*, B.S., Massachusetts Institute of Technology, 1960; Ph.D., 1965.

JOEL E. GORDON, *Professor of Physics*, A.B., Harvard, 1952; Ph.D., Columbia, 1958.

GEORGE S. GREENSTEIN, *Assistant Professor of Astronomy*, B.S., Stanford University, 1962; Ph.D., Yale University, 1968.

ROBERT FREEMAN GROSE, *Associate Professor of Psychology*, B.A., Yale University, 1944; M.S., 1947; Ph.D., 1953.

MUFARO J. HOVE, *Assistant Professor*, B.Sc., Wittenburg University, 1967; M.Sc., Northwestern, 1968; Ph.D., 1971.

ERNEST A. JOHNSON, JR., *Professor of Romance Languages*, B.A., Amherst, 1939; M.A., Chicago, 1940; Ph.D., Harvard, 1950.

GEORGE KATEB, *Professor of Political Science*, A.B., Columbia, 1952; A.M., 1953; Ph.D., 1960.

THOMAS R. KEARNS, *Associate Professor of Philosophy*, B.A., University of Illinois, 1959; LL.B., University of California, 1962; M.A., 1964; Ph.D., University of Wisconsin, 1968.

WILLIAM E. KENNICK, *Professor of Philosophy*, A.B., Oberlin, 1945; Ph.D., Cornell, 1952.

ALLEN KROPF, *Professor of Chemistry*, B.S., Queens, 1951; Ph.D., Utah, 1954.

EDWARD R. LEADBETTER, *Professor of Biology*, B.S., Franklin and Marshall, 1955; Ph.D., Texas, 1959.

ROBERT MAY, *Clinical Psychologist*, B.A., Wesleyan University, 1962; Ph.D., Harvard University, 1969.

NANA NKETSIA, *Professor*, B.A., Oxford University; Ph.D., Oxford University.

ROSE R. OLVER, *Professor of Psychology*, B.A., Swarthmore College, 1958; Ph.D., Radcliffe College, 1962.

DONALD S. PITKIN, *Professor of Anthropology*, B.A., Harvard, 1947; M.A., 1950; Ph.D., 1954.

ROBERT H. ROMER, *Professor of Physics*, A.B., Amherst, 1952; Ph.D., Princeton, 1955.

GEORGE S. SACERDOTE, *Assistant Professor of Mathematics*, S.B., Massachusetts Institute of Technology, 1967; Ph.D., Illinois, 1976.

G. DANN SARGENT, *Associate Professor of Chemistry*, A.B., Middlebury, 1957; B.A., Oxford, England, 1959; M.A., 1963; M.A., Harvard, 1963; Ph.D., 1964.

MARC S. SILVER, *Professor of Chemistry*, A.B., Harvard, 1955; Ph.D., California Institute of Technology, 1959.

CHARLES A. SORENSON, *Assistant Professor of Psychology*, B.A., California, 1966; Ph.D., 1971.

DUDLEY H. TOWNE, *Professor of Physics*, B.S., Yale, 1947; M.A., Harvard, 1949; Ph.D., 1954.

HENRY T. YOST, JR., *Professor of Biology*, A.B., Johns Hopkins, 1947; Ph.D., 1951.

## Hampshire College

MERLE BRUNO, *Assistant Professor of Biology*, B.S., Syracuse University, 1960; M.A., Harvard University, 1963; Ph.D., 1971.

RAYMOND P. COPPINGER, *Associate Professor of Biology*, A.B., Boston, 1959; M.A., Massachusetts, 1964; Ph.D., 1968.

JOHN M. FOSTER, *Professor of Biology*, A.B., Swarthmore, 1950; M.A., Harvard, 1953; Ph.D., 1954.

COURTNEY P. GORDON, *Associate Professor of Astronomy*, B.A., Vassar, 1961; A.M., Michigan, 1963; Ph.D., 1967.

KURTISS J. GORDON, *Associate Professor of Astronomy*, B.S., Antioch, 1964; A.M., Michigan, 1966; Ph.D., 1969.

EVERETT M. HAFNER, *Professor of Physics*, B.S., Union, 1940; Ph.D., Rochester, 1948.

ALLEN R. HANSON, *Assistant Professor of Computer Science*, B.S., Clarkson College, 1964; M.S., Cornell University, 1966; Ph.D., 1969.

GLORIA JOSEPH, *Professor of Education*, B.S., New York University; M.A., City College of New York; Ph.D., Cornell, 1967.

RICHARD C. LYON, *Professor of English and American Studies*, B.A., Texas, 1951; B.A., Cambridge, 1953; M.A., 1955; M.A., Connecticut, 1958; Ph.D., Minnesota, 1962.

ROBERT MARQUEZ, *Associate Professor of Hispanic and American Literature*, B.A., Brandeis, 1966; M.A., Harvard, 1967; Ph.D., 1973.

WILLIAM MARSH, *Associate Professor of Mathematics*, A.B., Dartmouth, 1962; M.A., 1965; Ph.D., 1966.

## UNIVERSITY OF MASSACHUSETTS

MICHAEL R. SUTHERLAND, *Assistant Professor of Statistics*, B.A., Antioch, 1967; Ph.D., Harvard, 1974.

ROBERT P. VON DIR LIPPE, *Associate Professor of Sociology*, B.A., Stanford, 1953; M.A., 1958; Ph.D., 1962.

BARBARA YNGVESSON, *Associate Professor of Anthropology*, A.B., Barnard College, 1962; Ph.D., University of California at Berkeley, 1970.

## Mount Holyoke College

OLIVER E. ALLYN, *Professor of Theatre Arts*, B.F.A., Art Institute of Chicago, 1954; M.F.A., 1956.

JOHN J. BALOUEFF, *Associate Professor of Russian Languages and Literatures*, B. ès. L., Paris, France, 1935; Diplôme, 1937; Diploma, Antwerp, 1940; M.A., Stetson University, 1965.

ROBERT F. BERKEY, *Professor of Religion*, B.A., Otterbein College, 1952; B.D., and S.T.M., Oberlin, 1955-56; Ph.D., Hartford Seminary Foundation, 1958.

JAMES M. BRUCE, *Associate Professor of Sociology and Anthropology*, B.A., University of Oklahoma, 1961; M.A., 1965; Ph.D., Brown, 1969.

MARY K. CAMPBELL, *Associate Professor of Chemistry*, B.A., Rosemont College, 1960; Ph.D., Indiana University, 1966.

SIDONIF CASSIRER, *Professor of German*, B.A., Hunter College, 1948; M.A., Yale, 1950; Ph.D., 1957.

MARJORIE CHILDERS, *Assistant Professor of Sociology*, A.B., Vassar, 1963; M.A., New School for Social Research, 1966; Ph.D., 1973.

JOAN E. CIRUTI, *Professor of Spanish*, B.A., Southeastern Louisiana College, 1950; M.A., University of Oklahoma, 1954; Ph.D., Tulane, 1959.

TOM R. DENNIS, *Assistant Professor of Astronomy*, B.A., University of Michigan, 1963; M.A., 1964; M.A., Princeton, 1963; Ph.D., 1970.

FRANCIS J. DETOMA, *Associate Professor of Biological Sciences*, A.B., Clark University, 1962; M.Sc., Chicago, 1965; Ph.D., 1968.

PAUL ANTHONY DOBOSH, *Assistant Professor of Chemistry*, B.S., Carnegie Institute of Technology, 1965; M.S., 1967; Ph.D., Carnegie-Mellon University, 1969.

JOHN W. DURSO, *Associate Professor of Physics and of Computer Studies*, A.B., Cornell, 1959; Ph.D., Pennsylvania State University, 1964.

JAMES D. ELLIS, *Professor of English*, B.A., Oberlin, 1957; M.A., University of Iowa, 1961; Ph.D., 1964.

PETER M. ENGGASS, *Associate Professor of Geography*, B.A., University of Michigan, 1955; M.A., 1959; Ph.D., 1966.

ANTHONY EDWARD FARNHAM, *Professor of English*, A.B., California at Berkeley, 1951; A.M., Harvard University, 1957; Ph.D., 1964.

DEANE W. FERM, *Lecturer in Religion*, B.A., College of Wooster, 1949; M.A., Yale, 1952; B.D., 1953; Ph.D., 1954.

JEAN GROSSHOLTZ, *Professor of Political Science*, B.A., Pennsylvania State, 1956; M.A., University of Denver, 1957; Ph.D., Massachusetts Institute of Technology, 1961.

GEORGE E. HALL, *Professor of Chemistry*, B.S., Yale, 1933; Ph.D., 1942.

JEAN C. HARRIS, *Professor of Art*, B.A., Smith, 1949; A.M., Radcliffe, 1954; Ph.D., 1961.

ANNA J. HARRISON, *Professor of Chemistry*, A.B., University of Missouri, 1933; B.S., 1935; M.A., 1937; Ph.D., 1948.

EDWARD HIRSCH, *Assistant Professor of Psychology*, B.A., Brooklyn College, 1965; M.A., Temple University, 1966; Ph.D., Rutgers University, 1971.

RICHARD A. JOHNSON, *Professor of English*, B.A., Swarthmore, 1959; Ph.D., Cornell, 1965.

THEODORE C. JONES, *Assistant Professor of Biological Sciences*, B.A., Amherst, 1961; Ph.D., University of Washington, 1967.

MARJORIE KAUFMAN, *Professor of English*, B.S., Wisconsin State College, 1944; M.A., University of Washington, 1947; Ph.D., University of Minnesota, 1954.

EMILE AUGUSTE LANGLOIS, *Associate Professor of French*, Lic. d'Anglais, Sorbonne, 1958; Diplôme d'Études Supérieures, 1960; Agrégé de l'Université, 1967; D. de 3<sup>e</sup> cycle, Université de Montpellier, 1969.

WILLIAM S. McFEELY, *Professor of History*, B.A., Amherst, 1952; M.A., Yale, 1962; Ph.D., 1966.

JACQUES-HENRI PERIVIER, *Professor of French*, Baccalauréat, St. Joseph, Poitiers, France, 1950; Licence-en-Droit, University of Paris, 1955; A.M., University of Pennsylvania; Ph.D., 1965.

HARRIET POLIATSEK, *Associate Professor of Mathematics*, B.A., University of Michigan, 1963; M.A., 1964; Ph.D., 1967.

MARILYN Z. PRYOR, *Associate Professor of Biological Sciences*, B.S., Madison College, 1956; M.S., Tennessee, 1958; Ph.D., 1961.

BETTY N. QUINN, *Professor of Classics*, B.A., Mount Holyoke, 1941; M.A., Bryn Mawr, 1942; Ph.D., 1944.

JOHN RAPOPORT, *Associate Professor of Economics*, B.A., Dartmouth College, 1965; M.A., University of Pennsylvania, 1966; Ph.D., 1970.

ELLEN REESE, *Lecturer in Psychology*, A.B., 1948; Mount Holyoke College; A.M., 1954.

ROBERT L. ROBERTSON, JR., *Professor of Economics*, B.S., Cornell, 1953; M.S., University of Wisconsin, 1956; Ph.D., 1960.

RICHARD S. ROBIN, *Professor of Philosophy*, A.B., Harvard, 1948; Ph.D., 1958.

VLADIMIR SAJKOVIC, *Professor of Russian Languages and Literature*, Diploma, Russkoi Realnoe Hchilishche, Terjoki, Finland, 1932; M.A., University of Pennsylvania, 1949; Ph.D., 1953.

DAVID SAMUEL SCHWARZ, *Assistant Professor of Philosophy*, B.A., Ripon College, 1965; B.Phil., St. Andrews, 1968; Ph.D., California at Berkeley, 1972.

## GRADUATE SCHOOL

BULKELEY SMITH, JR., *Professor of Sociology*, B.A., Yale, 1947; M.A., 1954; Ph.D., 1958.

CURTIS G. SMITH, *Professor of Biological Sciences*, A.B., Chicago, 1948; Ph.D., 1954.

ISABELLE B. SPRAGUE, *Professor of Biological Sciences*, A.B., Mount Holyoke, 1937; M.A., 1939; Ph.D., University of Kansas, 1953.

EUGENIO SUAREZ-GALBAN, *Associate Professor of Spanish*, B.A., Boston College, 1961; M.A., New York University, 1964; Ph.D., 1967.

JEAN SUDRANN, *Professor of English*, B.A., Mount Holyoke, 1939; M.A., Columbia University, 1940; Ph.D., 1950.

MARGARET L. SWITTEN, *Professor of French*, B.M., Westminster Choir College, 1947; B.A., Barnard, 1948; M.A., Bryn Mawr, 1949; Ph.D., 1952.

JOHN L. TEALL, *E. Nevius Rodman Professor of History*, A.B., Yale, 1948; M.A., 1950; Ph.D., 1956.

GEORGE V. TOVEY, *Professor of Philosophy*, A.B., Lafayette, 1942; Ph.D., University of Iowa, 1950.

JANE K. TOWNSEND, *Professor of Biological Sciences*, B.S., Beloit College, 1944; M.A., University of Wisconsin, 1946; Ph.D., University of Iowa, 1950.

EDWIN S. WEAVER, *Professor of Chemistry*, B.S., Yale, 1954; Ph.D., Cornell, 1959.

KENNETH L. WILLIAMSON, *Professor of Chemistry*, A.B., Harvard, 1956; Ph.D., Wisconsin, 1960.

## Smith College

MARIA N. BANERJEE, *Associate Professor of Russian*, Baccalaureat d'études secondaires, University of Paris, 1955; M.A., University of Montreal, 1957; Ph.D., Harvard University, 1962.

LEONARD BERKMAN, *Assistant Professor of Theater*, B.A., Columbia University, 1960; M.F.A., Yale University, 1963; D.F.A., Yale University, 1970.

H. ROBERT BURGER, III, *Professor of Geology*, B.S., Yale, 1962; A.M., Indiana, 1964; Ph.D., 1966.

C. JOHN BURK, *Professor in the Biological Sciences*, A.B., Miami, Ohio, 1957; M.A., North Carolina, 1959; Ph.D., 1961.

HELEN CHINYOY, *Professor of Theater*, B.A., New York University, 1943; Ph.D., Columbia University, 1963.

ALLEN H. CURRAN, *Associate Professor of Geology*, B.S., Washington, and Lee, 1962; M.S., North Carolina at Chapel Hill, 1965; Ph.D., 1968.

THOMAS S. DERR, *Associate Professor of Religion*, A.B., Harvard, 1953; B.D., Union Theological Seminary, 1956; Ph.D., Columbia University, 1972.

GEORGE E. DIMOCK, JR., *Professor of Classical Languages and Literatures*, B.A., Yale, 1939; M.A., 1940; Ph.D., 1949.

GEORGE S. DURHAM, *Professor of Chemistry*, B.A., Reed, 1935; Ph.D., New York University, 1939.

LAWRENCE A. FINK, *Professor of Education and Child Study*, B.A., Stanford University, 1951; M.A., Columbia University, 1958; Ed.D., 1963.

GEORGE M. FLECK, *Associate Professor of Chemistry*, B.S., Yale, 1956; Ph.D., Wisconsin, 1961.

RAYMOND H. GILES, JR., *Associate Professor of Education and Afro-American Studies*, B.A., Hunter College, 1961; M.A., City University of New York; Ed.D., University of Massachusetts, 1972.

MYRON GLAZER, *Professor of Sociology*, B.A., City College of New York, 1956; M.A., Rutgers University, 1961; M.A., Princeton University, 1963; Ph.D., 1965.

DAVID A. HASKELL, *Associate Professor in the Biological Sciences*, B.Sc., Ohio State, 1951; M.S., Purdue, 1957; Ph.D., 1960.

KENNETH B. HELLMAN, *Associate Professor of Chemistry*, A.B., Drew, 1956; M.S., Michigan State, 1959; Ph.D., 1962.

CHARLES HENDERSON, JR., *Professor of Classics*, A.B., Davidson, 1942; M.A., North Carolina, 1947; Ph.D., 1955.

SEYMOUR W. ITZKOFF, *Professor of Education*, B.A., University of Hartford, 1950; M.A., Columbia University, 1955; Ed.D., 1964.

ERNA R. BERNDT KELLEY, *Professor of Hispanic Studies*, B.A., Wisconsin, 1954; M.A., 1955; Ph.D., 1959.

EDITH KERN, *Doris Silbert Professor in Comparative Literature*, Ph.D., Johns Hopkins University.

MURRAY J. KITELEY, *Professor of Philosophy*, B.A., Minnesota, 1950; M.A., 1958; Ph.D., 1959.

THOMAS H. LOWRY, *Associate Professor of Chemistry*, A.B., Princeton, 1960; Ph.D., Harvard, 1965.

GEORGE F. MAIR, *Professor of Economics*, A.B., Princeton, 1943; M.A., 1948; Ph.D., 1957.

JEANNE McFARLAND, *Assistant Professor of Economics*, B.A., University of Arizona, 1962; M.A., University of California at Berkeley, 1970; Ph.D., 1972.

BARBARA S. MUSGRAVE, *Professor of Psychology*, B.A., Minnesota, 1954; M.A., 1960; Ph.D., Massachusetts, 1960.

JOAQUINA NAVARRO, *Professor of Hispanic Studies*, B.A., Instituto Escuela, Madrid, 1934; M.A., Columbia, 1942; Ph.D., 1954.

KATHRYN PYNE PARSONS, *Associate Professor of Philosophy*, B.A., Indiana University, 1961; Ph.D., Stanford University, 1968.

JEANNE POWELL, *Associate Professor in the Biological Sciences*, A.B., Pembroke, 1954; M.A., Bryn Mawr, 1959; Ph.D., 1967.

DONALD B. REUTENER, JR., *Associate Professor of Psychology*, B.A., Oberlin College, 1960; M.A., Ohio State University, 1967; Ph.D., 1969.

PETER ROSE, *Sophia Smith Professor of Sociology and Anthropology*, A.B., Syracuse, 1954; M.A., Cornell, 1957; Ph.D., 1959.

STANLEY ROTHMAN, *Professor of Government*, B.S.E., City College of New York, 1949; M.A., Brown, 1951; Ph.D., Barnard, 1958.



## UNIVERSITY OF MASSACHUSETTS

JUDITH RYAN, *Professor of German*, B.A., Sydney University, 1964; Ph.D., University of Münster, Germany, 1970.

WILLY SCHUMANN, *Professor of German*, B.A., Southern Methodist, 1952; M.A., 1953; Ph.D., Columbia, 1959.

WALTRAUT C. SEITTER, *Eliza Appleton Haven Professor of Astronomy*, M.A., Smith, 1955; Ph.D., University of Bonn, Germany, 1962.

MARGARET L. SHOOK, *Associate Professor of English*, B.A., Smith College, 1953; Ph.D., University of California, 1966.

MALCOLM B. E. SMITH, *Associate Professor of Philosophy*, B.A., Virginia Military Institute, 1961; Ph.D., Cornell University, 1969.

J. DIEDRICK SNOEK, *Associate Professor of Psychology*, B.A., Western Reserve University, 1954; M.A., University of Michigan, 1956; Ph.D., 1959.

MILTON D. SOFFER, *Professor of Chemistry*, B.S., Arkansas, 1937; A.M., Harvard, 1939; Ph.D., 1942.

THOMAS A. TYMOCZKO, *Assistant Professor of Philosophy*, A.B., Harvard University, 1965; Ph.D., 1972.

HANS VAGET, *Associate Professor of German*, M.A., University of Tübingen, 1964; Ph.D., Columbia University, 1969.

GEORGE DE VILLAFRANCA, *Gates Professor in the Biological Sciences*, B.S., Yale, 1948; Ph.D., 1953.

KLEMENS VON KLEMPERER, *L. Clark Seelye Professor of History*, M.A., Harvard University, 1940; Ph.D., 1949.

## Index

|                                                |        |
|------------------------------------------------|--------|
| Academic Calendar .....                        | 4      |
| Accounting .....                               | 47, 52 |
| Adding Courses .....                           | 26     |
| Administrative Officers .....                  | 9      |
| Admission .....                                | 14     |
| Agricultural Engineering .....                 | 102    |
| Animal Diseases .....                          | 30     |
| Animal Science .....                           | 29     |
| Anthropology .....                             | 30     |
| Anthropology, Field Course .....               | 13     |
| Art .....                                      | 34     |
| Art History .....                              | 35     |
| Assistantships .....                           | 18     |
| Associated Five-College Graduate Faculty ..... | 201    |
| Astronomy .....                                | 39     |
| Biochemistry .....                             | 40     |
| Board .....                                    | 17     |
| Boston, U/Mass. Graduate Programs .....        | 10     |
| Botany .....                                   | 42     |
| Business Administration .....                  | 44     |
| Calendar .....                                 | 4      |
| Certificate of Advanced Graduate Study .....   | 79     |
| Chemical Engineering .....                     | 53     |
| Chemistry .....                                | 55     |
| Civil Engineering .....                        | 59     |
| Classics .....                                 | 63     |
| College Work-Study Program .....               | 19     |
| Commencement Fee .....                         | 16     |
| Communication Disorders .....                  | 64     |
| Communication Studies .....                    | 66     |
| Comparative Literature .....                   | 68     |
| Computer and Information Science .....         | 70     |
| Computing Center .....                         | 11     |
| Continuing Education .....                     | 20     |
| Course Changes .....                           | 26     |
| Course Numbering System .....                  | 26     |
| Courses Offered .....                          | 29     |
| Degree Students Defined .....                  | 14     |
| Degrees, Requirements .....                    | 21, 23 |
| Description of Programs and Courses .....      | 29     |
| Dissertation, Doctoral .....                   | 22     |
| Doctoral Programs .....                        | 19     |
| Doctoral Requirements .....                    | 21     |
| Dropping Courses .....                         | 26     |
| Economics .....                                | 73     |
| Education .....                                | 77     |
| Electrical and Computer Engineering .....      | 90     |
| Emeriti, Faculty .....                         | 200    |
| English .....                                  | 94     |
| Entomology .....                               | 98     |
| Environmental Design .....                     | 36     |
| Environmental Engineering .....                | 99     |
| Environmental Sciences .....                   | 100    |
| Examination, Foreign Language .....            | 25     |
| Exercise Science .....                         | 101    |
| Expenses .....                                 | 15     |

## GRADUATE SCHOOL

|                                                                |        |
|----------------------------------------------------------------|--------|
| Faculty Graduate Study .....                                   | 15     |
| Federal Fellowships .....                                      | 18     |
| Fees .....                                                     | 15     |
| Fellowships .....                                              | 18     |
| Finance .....                                                  | 48     |
| Financial Aid .....                                            | 18     |
| Fine Arts, Master of .....                                     | 24     |
| Fisheries Biology .....                                        | 194    |
| Five-College Cooperative Ph.D. ....                            | 22     |
| Five-College Graduate Faculty .....                            | 201    |
| Five-College Library Use .....                                 | 27     |
| Food and Agricultural Engineering .....                        | 102    |
| Food and Resource Economics .....                              | 103    |
| Food Science and Nutrition .....                               | 105    |
| Foreign Applicants .....                                       | 15     |
| Foreign Language, Graduate Reading Exam ..                     | 25     |
| Forestry and Wood Techonolgy .....                             | 108    |
| Freiburg Program .....                                         | 12     |
| Freiburg Summer Program .....                                  | 12     |
| French .....                                                   | 110    |
| General Business and Finance .....                             | 52     |
| General Information .....                                      | 10     |
| General Regulations .....                                      | 26     |
| Genetics (Animal Science) .....                                | 29     |
| Geology .....                                                  | 114    |
| Germanic Languages and Literatures .....                       | 118    |
| Grade Requirements .....                                       | 26     |
| Graduate Assistantships .....                                  | 18     |
| Graduate Faculty, Five-College .....                           | 201    |
| Graduate Student Senate .....                                  | 28     |
| Hampshire Inter-Library Center .....                           | 11     |
| Health Services .....                                          | 27     |
| History .....                                                  | 121    |
| Home Economics .....                                           | 127    |
| Home Economics Education .....                                 | 128    |
| Hotel, Restaurant & Travel Administration ..                   | 128    |
| Housing .....                                                  | 17     |
| Human Development .....                                        | 81     |
| Incompletes .....                                              | 26     |
| Industrial and Personnel Relations .....                       | 47     |
| Industrial Engineering .....                                   | 130    |
| Industrial Microbiology .....                                  | 105    |
| Information, General .....                                     | 10     |
| Institute of Agricultural and Industrial<br>Microbiology ..... | 105    |
| Labor Relations and Research Center .....                      | 11     |
| Labor Studies .....                                            | 133    |
| Landscape Architecture .....                                   | 134    |
| Language Examinations .....                                    | 25     |
| Latin .....                                                    | 64     |
| Library .....                                                  | 10     |
| Linguistics .....                                              | 137    |
| Literature, Comparative .....                                  | 68     |
| Loans, ND .....                                                | 19     |
| Major Offerings .....                                          | 19     |
| Management .....                                               | 47, 53 |
| Manufacturing Engineering .....                                | 140    |

## UNIVERSITY OF MASSACHUSETTS

|                                             |          |                                                  |        |
|---------------------------------------------|----------|--------------------------------------------------|--------|
| Marketing .....                             | 47       | Regional Planning .....                          | 134    |
| Marine Sciences .....                       | 140      | Regulations, General .....                       | 26     |
| Marine Station .....                        | 11       | Refunds .....                                    | 16     |
| Master of Arts in Teaching .....            | 24       | Rent .....                                       | 17     |
| Master's Programs .....                     | 20       | Requirements:                                    |        |
| Master's Requirements .....                 | 23       | <i>Doctoral Degrees</i> .....                    | 21     |
| Master's Thesis .....                       | 25       | <i>Master's Degrees</i> .....                    | 23     |
| Mathematics .....                           | 141      | Research Assistantships .....                    | 18     |
| Maximum Credit Load .....                   | 26       | Residence, Certificate of .....                  | 15     |
| Mechanical Engineering .....                | 147      | Romance Languages                                |        |
| Medical-Surgical Insurance .....            | 16       | (see French and Spanish) .....                   |        |
| Microbiology .....                          | 151      | ROTC (Military and Air Science) .....            | 12     |
| Microfilming Dissertations .....            | 23       | Slavic Languages and Literatures .....           | 183    |
| Military and Air Science .....              | 12       | Sociology .....                                  | 185    |
| Music .....                                 | 152      | Spanish .....                                    | 188    |
| ND Loans .....                              | 19       | Special Services .....                           | 27     |
| New England Regional Student Program .....  | 15       | Sport Administration .....                       | 191    |
| Non-Degree Students Defined .....           | 11       | Sport Studies .....                              | 191    |
| Nursing .....                               | 154      | Staff Graduate Study .....                       | 15     |
| Nutrition (Animal Science) .....            | 30       | Statistics .....                                 | 141    |
| Ocean Engineering .....                     | 156      | Suburban Experiment Station .....                | 12     |
| Operations Management .....                 | 46       | Summer Courses .....                             | 27     |
| Operations Research:                        |          | Teaching Improvement Services .....              | 28     |
| Industrial Engineering .....                | 130      | Teaching Assistantships .....                    | 18     |
| Management Science .....                    | 47       | Theater .....                                    | 192    |
| Oxford Summer Program .....                 | 12       | Thesis Requirements .....                        | 25     |
| Philosophy .....                            | 158      | Transfer of Courses and Credits .....            | 24, 27 |
| Physical Education .....                    | 101, 191 | Trustees .....                                   | 8      |
| Physics .....                               | 161      | Tuition and Fees .....                           | 15     |
| Physiology (Animal Science) .....           | 30       | Undergraduate Participation in Graduate          |        |
| Placement Service .....                     | 28       | Level Courses .....                              | 27     |
| Plant Pathology .....                       | 166      | University, The .....                            | 10     |
| Plant and Soil Sciences .....               | 164      | University Fellowships .....                     | 18     |
| Political Science .....                     | 167      | Veterinary Science .....                         | 29     |
| Polymer Science and Engineering .....       | 171      | Waiver of Tuition .....                          | 16     |
| Post-Doctoral Fellows, Research Associates, |          | Water Resources Research Center .....            | 11     |
| and Visiting Fellows .....                  | 28       | Wildlife and Fisheries Biology .....             | 194    |
| Program Fee .....                           | 16       | Withdrawal Regulations .....                     | 26     |
| Programs Abroad .....                       | 12       | Wood Technology .....                            | 108    |
| Programs Offered .....                      | 19       | Worcester Medical School Graduate Programs ..... | 10     |
| Provisional Students Defined .....          | 14       | Zoology .....                                    | 196    |
| Psychology .....                            | 173      |                                                  |        |
| Public Administration .....                 | 167      |                                                  |        |
| Public Health .....                         | 179      |                                                  |        |
| Readmission .....                           | 14       |                                                  |        |





# SUMMER SESSION 1976



University of  
Massachusetts  
at Amherst

Catalog coordination and production/Lorraine Bogartz  
Cover Design and Production Assistance/Karla Michaels  
Cover Photo/University Photo Center  
Prints/*Pictorial Archives Collection*, Dover Publications, Inc., New York



## The Board of Trustees - 1976

|                                                   |                                          |                                                     |
|---------------------------------------------------|------------------------------------------|-----------------------------------------------------|
| Robert M. Abrams<br>Holyoke                       | Ellen Gavin<br>Amherst                   | Cary Rothenburger<br>Boston                         |
| Gregory R. Anrig, <i>ex officio</i><br>Boston     | Robert D. Gordon<br>Boston               | Alan Shaler<br>Easthampton                          |
| Stephen G. Breyer<br>Cambridge                    | Joseph P. Healey<br>Burlington           | Erline Shearer<br>Boston                            |
| Sylvia Buiack<br>Boston                           | Ogretta V. McNeil<br>Worcester           | Robert J. Spiller<br>Boston                         |
| Bruce R. Carlson<br>North Adams                   | Ruth Morgenthau<br>Waltham               | Frederick S. Troy<br>Boston                         |
| Catherine Forbes Clark<br>Dorchester              | Robert Okin, <i>ex officio</i><br>Boston | Frederic Winthrop, Jr., <i>ex officio</i><br>Boston |
| Edmund J. Croce<br>Worcester                      | Gavin D. Robertson<br>Worcester          | Robert C. Wood, <i>ex officio</i>                   |
| Daniel Dennis<br>Boston                           | Carolyn C. Rowland<br>Osterville         |                                                     |
| Michael S. Dukakis, <i>ex officio</i><br>Boston   |                                          |                                                     |
| Nancy B. Eddy, <i>ex officio</i><br>Amherst       |                                          |                                                     |
| Jonathan E. Fielding, <i>ex officio</i><br>Boston |                                          |                                                     |
|                                                   | Officers of the Board                    |                                                     |
|                                                   | Chairman.....                            | Joseph P. Healey                                    |
|                                                   | President.....                           | Robert C. Wood, <i>ex officio</i>                   |
|                                                   | Treasurer.....                           | Kenneth W. Johnson, <i>ex officio</i>               |
|                                                   | Secretary.....                           | Gladys Keith Hardy                                  |
|                                                   | Assistant Secretary.....                 | Dorothy K. Eichel                                   |

## The University

Founded in 1863, the University of Massachusetts is one of 66 land grant colleges and universities in the United States providing public education, research and service. The University campus in Amherst, situated on 1,100 acres in the picturesque Connecticut River Valley, has approximately 24,000 students and is served by a \$200-million physical plant. The University has continually expanded to meet the growing needs of the Commonwealth. The University of Massachusetts at Boston opened in 1965 and currently enrolls approximately 7,000 students. Inaugurated in the fall of 1970, the new University of Massachusetts Medical School in Worcester opened its teaching hospital in 1975.

At Amherst, a broad and continuous program is provided by the undergraduate schools and colleges, the Graduate School and the Division of Continuing Education. Basic units are the College of Arts and Sciences, the College of Food and Natural Resources, and the Schools of Business Administration, Education, Engineering, Health Sciences and Physical Education. The University also has voluntary Army and Air Force ROTC programs, an active Phi Beta Kappa chapter, and more than 400 student organizations. Numerous centers, bureaus and institutes actively serve the Commonwealth in such fields as government research, labor relations, natural resources and population.

The University has joined Amherst, Hampshire, Mount Holyoke and Smith Colleges in a five-college cooperative program, developing numerous academic programs, offering opportunities for course interchange to students, as well as operating a radio station and offering lectures, special courses, and inter-library loans.

The University has had an active Summer Session since 1909, and summer study is a long tradition in Amherst. In addition, the University established the Division of Continuing Education in 1970, and began a merger of administrative operations of the Summer Session and Continuing Education in 1975. This merger has been completed during the course of the present academic year, and the Summer Session of 1976 will represent the full assumption of administrative responsibility by the Division of Continuing Education, working directly with the Office of the Provost.

The Division has expanded the concept of "student" to include adults attending credit courses on a part-time basis, evenings or weekends, on campus or off, and persons participating in non-credit activities including conferences, workshops and institutes. The Division is largely self-funded, and operates the Summer Session on a fee-assisted basis as a service to the University and to students of the Commonwealth, with administrative costs being absorbed by the University.

---

# Table of Contents

|                                    |    |
|------------------------------------|----|
| Academic Calendar for Blocks ..... | 3  |
| Block Schedule .....               | 4  |
| Academic Calendar .....            | 5  |
| General Information .....          | 12 |
| Course Descriptions .....          | 20 |
| Schedule of Courses .....          | 35 |
| Map .....                          | 39 |
| Foreign Programs .....             | 40 |
| Credit-Free Workshop Program ..... | 41 |
| Index .....                        | 48 |

---

## Summer Session Offices

|                                       |          |                                   |          |
|---------------------------------------|----------|-----------------------------------|----------|
| Admissions, Undergraduate             | 545-0222 | Housing                           | 545-2100 |
| Advising, Undergraduate               |          | ID Cards                          | 545-0197 |
| College of Arts & Sciences            | 545-2191 | Parking                           | 545-0065 |
| School of Business Administration     | 545-2852 | Public Safety                     | 545-2121 |
| Division of Continuing Education      | 545-3430 | Registrar                         | 545-0555 |
| School of Education                   | 545-2701 | Student Development Center        | 545-2700 |
| School of Engineering                 | 545-0300 | Summer Activities                 | 545-2351 |
| College of Food and Natural Resources | 545-2890 | Toward Tomorrow Bicentennial Fair | 545-0474 |
| School of Health Sciences             | 545-2177 | Transfer Affairs                  | 545-0860 |
| School of Physical Education          | 545-2338 | Veterans Affairs                  | 545-1346 |
| Bus Transportation                    | 545-0056 |                                   |          |
| Campus Center                         | 545-0585 |                                   |          |
| Continuing Education Records          | 545-3653 |                                   |          |
| Credit-Free Workshop Program          | 545-3410 |                                   |          |
| Director of Summer Session            | 545-3420 |                                   |          |
| Financial Aid                         |          |                                   |          |
| UMass Students                        | 545-0801 |                                   |          |
| Continuing Education Students         | 545-3430 |                                   |          |
| Graduate Records                      | 545-0025 |                                   |          |
| Health Services                       | 549-2671 |                                   |          |

## 3 Week Blocks

### F June 1-June 18

|               |                                                         |
|---------------|---------------------------------------------------------|
| Wed., May 19  | Deadline for Advance Mail Registration                  |
| Fri., May 28  | Walk-In Registration                                    |
| Tues., June 1 | First day of classes<br>Add/Drop Period*<br>"W" Period* |
| Sat., June 5  | Monday class schedule will be followed                  |
| Fri., June 18 | Last day of classes                                     |

\*Add, drop and withdrawal deadlines will be determined by the individual Academic Dean. See *Change of Program Deadlines*.

### G June 21-July 10

|               |                                                                       |
|---------------|-----------------------------------------------------------------------|
| Fri., June 11 | Deadline for Advance Mail Registration                                |
| Fri., June 18 | Walk-In Registration (for course changes and late registrations only) |
| Mon., June 21 | First day of classes<br>Add/Drop Period*<br>"W" Period*               |
| Mon., July 5  | Holiday - no classes                                                  |
| Sat., July 10 | Last day of classes<br>Monday class schedule will be followed         |

\*Add, drop and withdrawal deadlines will be determined by the individual Academic Dean. See *Change of Program Deadlines*.

### H July 12-July 30

|               |                                                                       |
|---------------|-----------------------------------------------------------------------|
| Fri., June 30 | Deadline for Advance Mail Registration                                |
| Fri., July 9  | Walk-In Registration (for course changes and late registrations only) |
| Mon., July 12 | First day of classes<br>Add/Drop Period*<br>"W" Period*               |
| Fri., July 30 | Last day of classes                                                   |

\*Add, drop and withdrawal deadlines will be determined by the individual Academic Dean. See *Change of Program Deadlines*.

### I August 2-August 20

|               |                                                         |
|---------------|---------------------------------------------------------|
| Fri., July 23 | Deadline for Advance Mail Registration                  |
| Fri., July 30 | Walk-In Registration                                    |
| Mon., Aug. 2  | First day of classes<br>Add/Drop Period*<br>"W" Period* |
| Fri., Aug. 20 | Last day of classes                                     |

\*Add, drop and withdrawal deadlines will be determined by the individual Academic Dean. See *Change of Program Deadlines*.

## 6 Week Blocks

### D June 1-July 10

|               |                                                               |
|---------------|---------------------------------------------------------------|
| Wed., May 19  | Deadline for Advance Mail Registration                        |
| Fri., May 28  | Walk-In Registration                                          |
| Tues., June 1 | First day of classes                                          |
| Sat., June 5  | End Add/Drop Period<br>Monday class schedule will be followed |
| Fri., June 11 | End "W" Period                                                |
| Mon., July 5  | Holiday - no classes                                          |
| Sat., July 10 | Last day of classes<br>Monday class schedule will be followed |

### E July 12-August 20

|               |                                        |
|---------------|----------------------------------------|
| Fri., June 30 | Deadline for Advance Mail Registration |
| Fri., July 9  | Walk-In Registration                   |
| Mon., July 12 | First day of classes                   |
| Fri., July 16 | End Add/Drop Period                    |
| Fri., July 23 | End "W" Period                         |
| Fri., Aug. 20 | Last day of classes                    |

### L June 21-July 30

|               |                                        |
|---------------|----------------------------------------|
| Fri., June 11 | Deadline for Advance Mail Registration |
| Fri., June 18 | Walk-In Registration                   |
| Mon., June 21 | First day of classes                   |
| Fri., June 25 | End Add/Drop Period                    |
| Fri., July 2  | End "W" Period                         |
| Mon., July 5  | Holiday - no classes                   |
| Sat., July 10 | Monday class schedule will be followed |
| Fri., July 30 | Last day of classes                    |

## 9 Week Block

### J June 1-July 30

|               |                                                               |
|---------------|---------------------------------------------------------------|
| Wed., May 19  | Deadline for Advance Mail Registration                        |
| Fri., May 28  | Walk-In Registration                                          |
| Tues., June 1 | First day of classes                                          |
| Sat., June 5  | End Add/Drop Period<br>Monday class schedule will be followed |
| Fri., June 18 | End "W" Period                                                |
| Mon., July 5  | Holiday - no classes                                          |
| Fri., July 9  | Evening classes follow Monday schedule                        |
| Sat., July 10 | Day classes follow Monday schedule                            |
| Fri., July 30 | Last day of classes                                           |

## 12 Week Block

### C June 1-August 20

|               |                                                               |
|---------------|---------------------------------------------------------------|
| Wed., May 19  | Deadline for Advance Mail Registration                        |
| Fri., May 28  | Walk-In Registration                                          |
| Tues., June 1 | First day of classes                                          |
| Sat., June 5  | End Add/Drop Period<br>Monday class schedule will be followed |
| Fri., June 25 | End "W" Period                                                |
| Mon., July 5  | Holiday - no classes                                          |
| Sat., July 10 | Monday class schedule will be followed                        |
| Fri., Aug. 20 | Last day of classes                                           |

# Block Calendar

Summer Session courses have been scheduled in blocks of three, six, nine and twelve weeks. Each block has been labeled with a letter from C through L. On this page are calendars containing the most relevant information for the summer. The regular Academic Calendar, containing a complete listing of all Summer Session registration and deadline information as well as summer activities, begins on page 5. Detailed instructions on how to register may be found on page 12.

It is the student's responsibility to select courses with schedules that do not conflict, and to design a program free from error.



# Block Schedule

## C

June 1-August 20

COINS 122/422  
COINS 201/501  
COINS 350/650  
EDUC 390K  
GERMAN 126  
GERMAN 146  
LATIN 110  
LATIN 140  
PSYCH 871  
PUB HL 382  
PUB HL 782  
RHET 105A  
RHET 105B  
RHET 105C  
THEATR 100

## D

June 1-July 10

ACCTG 120  
ACCTG 130  
ACCTG 210  
ACCTG 220  
ACCTG 230  
ACCTG 263  
ACCTG 370  
AFROAM 151  
AFROAM 261  
AN SCI 121  
AN SCI 150  
AN SCI 151  
AN SCI 152  
AN SCI 153  
AN SCI 156  
AN SCI 220  
AN SCI 330  
ANTH 102  
ANTH 290M  
ART 295  
ASTRON 100  
BA 110  
BA 371  
BOTANY 121  
BOTANY 175  
CH E 125  
CHEM 111  
CHEM 261/561  
CHEM 263/563  
COMSTU 190A  
ECE 204  
ECON 103  
ECON 203  
EDUC 332  
EDUC 355  
EDUC 390D  
EDUC 632  
EDUC 655

EDUC 700B  
EDUC 915  
ENGL 273  
ENGL 384  
ENGL 732  
ENGL 838  
ENVDES 353  
F&R EC 177  
F&R EC 290A  
FRENCH 123  
FRENCH 470  
GB FIN 250  
GEOG 155  
GEOL 101  
GERMAN 409  
HIST 151  
HIST 215/515  
HIST 332/632  
LING 201  
M&A E 144  
M&A E 163  
MGT 201  
MGT 214  
MGT 230  
MGT 265  
MKTG 201  
MKTG 216  
NURSE 210  
NURSE 240  
NURSE 250  
NURSE 320  
NURSE 321  
PE G08  
PE G11  
PE G66  
PE G67  
PEP 151  
PEP 163  
PEP 190H  
PHIL 110  
PHIL 240  
PHYSIC 141  
PLPATH 100  
POLSCI 101  
POLSCI 226/526  
PSYCH 101A  
PSYCH 120  
PSYCH 140  
PSYCH 220/520  
PSYCH 280  
PSYCH 301A  
PUB HL 304/604  
PUB HL 340/640  
RHET 100C  
RHET 100G  
RUSS 110  
S BA 510  
S BA 611  
S BA 622  
S BA 650  
S BA 702  
S BA 706  
S BA 756  
SOCIOI 103  
SOCIOI 107  
SOCIOI 201  
SOCIOI 251  
SOCIOI 256  
SOCIOI 278

SPORST 366/666  
ZOOI 101

## E

July 12-August 20

ACCTG 120  
ACCTG 130  
ACCTG 221  
ACCTG 235  
ACCTG 371  
AFROAM 111  
AN SCI 150  
AN SCI 151  
AN SCI 152  
AN SCI 153  
AN SCI 157  
ANTH 103  
ANTH 340/640  
ART 287  
BA 110  
BA 371  
CH E 126  
CHEM 112  
CHEM 262/562  
CHEM 264/564  
COMLIT 101A  
COMSTU 225  
ECON 104  
ECON 131  
ECON 204  
EDUC 375/675  
EDUC 390E  
EDUC 831  
EDUC 884  
ENGL 131  
ENGL 382  
ENT 126  
F&R EC 226  
FRENCH 130  
GB FIN 260  
HIST 121  
HIST 150  
HIST 233/533  
I E 354  
LING 211  
M&A E 101  
MGT 201  
MGT 214  
MGT 231  
PE G67  
PHIL 125  
PHIL 264  
PHYSIC 142  
POLSCI 260  
PSYCH 130  
PSYCH 145  
PSYCH 265  
PSYCH 270  
RHET 100C  
RHET 100G  
RUSS 120  
S BA 671  
S BA 722  
S BA 752  
SOCIOI 103

SOCIOI 105  
SOCIOI 201  
SOCIOI 257  
SPAN 110  
SPAN 130  
SPAN 145  
SPAN 390H/700E  
SPAN 390J/700J  
SPORST 201  
ZOOI 161

## F

June 1-June 18

COMSTU 210  
COMSTU 391C  
EDUC 261/561  
EDUC 263/563  
EDUC 277/577  
EDUC 333/633  
EDUC 390A  
EDUC 390C  
EDUC 390J/686J  
EDUC 700C  
EDUC 782  
ENT 126  
FOREST 225  
HRTA 156  
HRTA 310  
ITAL 110  
LEGAL 391M  
LEGAL 391N  
LEGAL 391O  
LEGAL 391P  
LS&S 101  
MATH 101  
MUSIC 112  
NURSE 310  
POLSCI 336/636  
PSYCH 325  
PUB HL 700N  
RHET 100S  
SPAN 110  
WOST 290C

## G

June 21-July 10

COMSTU 170  
COMSTU 190B  
EDUC 309/609  
EDUC 390B  
EDUC 390G/686G  
EDUC 390H  
EDUC 390I/686I  
EDUC 390L/686L  
EDUC 700A  
EDUC 705  
EDUC 710  
ITAL 120  
MATH 102  
MUSIC 111A  
MUSIC 700H

PLSOIL 120  
POLSCI 190C  
PORT 110  
PORT 130  
PSYCH 365  
WOST 190Q

## H

July 12-July 30

COMSTU 707C  
EDUC 309/609  
EDUC 910  
LS&S 101  
MATH 103  
MUSIC 101  
MUSIC 231  
MUSIC 700G  
MUSIC 752  
MUSIC 755  
NURSE 200  
POLSCI 326A/726A  
PORT 120  
PORT 140  
PSYCH 260  
PSYCH 263A/563A  
WOST 190Z  
ZOOI 286A  
ZOOI 810B

## I

August 2-August 20

COMSTU 715  
POLSCI 131

## J

June 1-July 30

ACCTG 120  
ACCTG 220  
AFROAM 133  
AN SCI 359  
ANTH 104  
ART 100  
ART 120  
ART 210  
ART 220/520  
ART 224/524  
ART 230  
ART 240  
ART 330/630  
ASTRON 100  
BA 110  
BIOCHM 220/520  
BIOCHM 221/521  
CHEM 110  
CHEM 111  
CHEM 112  
CHEM 160

CHEM 162  
CHNSE 280  
COMDIS 588  
COMDIS 588A  
COMDIS 588B  
COMLIT 101B  
COMSTU 290B  
EDUC 251/551  
EDUC 390F  
EDUC 390M  
ENGL 152  
ENGL 262  
ENGL 290S  
ENGL 341  
ENVSCI 250  
FRENCH 162  
GB FIN 201  
GERMAN 110  
HIST 151  
HIST 185  
HIST 738  
HONORS E10  
LING 290S  
MATH 100  
MATH 110  
MATH 120  
MATH 121  
MATH 127  
MATH 131  
MATH 132  
MATH 165  
MATH 167  
MATH 211  
MATH 225  
MKTG 210  
MKTG 222  
NURSE 120

PE G09  
PEP 390D/700D  
PHIL 105  
PK ADM 390C  
POLSCI 223  
PSYCH 101B  
PSYCH 230/530  
PSYCH 260  
PSYCH 263A  
PSYCH 301B  
PSYCH 325  
REG PL 700M  
SOCIOI 255  
SPAN 110  
STATIS 121  
STATIS 140

## L

ANTH 377/677  
MUSIC 108  
MUSIC 120  
MUSIC 123  
MUSIC 162  
MUSIC 217  
MUSIC 603  
MUSIC 714  
MUSIC 762

The University of Massachusetts Summer Session has been designed to provide maximum flexibility for all students. Courses have been scheduled in blocks of three, six, nine and twelve weeks. Each block has been labeled with a letter from C through L. A special K block has been designated for courses scheduled independently. (For information about block K, see 'Thesis, Dissertation, Special Problems and Independent Study Credit.')

At the left are listed all courses offered in this catalog. In this special Block Schedule, they have been organized by the block to make it convenient for the student to select courses when limited by a particular block time, or when seeking to avoid conflicts of scheduling. Some courses are offered consecutively, some are offered concurrently, while others may appear in more than one block.

It is the student's responsibility to select courses with schedules that do not conflict, and to design a program free from error.

Below is a refund schedule listed by the block. At the right the Academic Calendar begins. The Calendar includes all deadlines, beginning and ending dates of classes for each block, as well as summer activities from the middle of May until August 20, when Summer Session ends.

Detailed instructions on How to Register may be found on page 12.

## Refund Schedule

### Block C (June 1 - August 20)

|                   |           |
|-------------------|-----------|
| June 1 - June 5   | 80%       |
| June 6 - June 11  | 60%       |
| June 12 - June 18 | 40%       |
| After June 18     | No Refund |

### Block D (June 1 - July 10)

|                  |           |
|------------------|-----------|
| June 1 - June 5  | 60%       |
| June 6 - June 11 | 20%       |
| After June 11    | No Refund |

### Block E (July 12 - August 20)

|                   |           |
|-------------------|-----------|
| July 12 - July 16 | 60%       |
| July 17 - July 23 | 20%       |
| After July 23     | No Refund |

### Block F (June 1 - June 18)

|                  |           |
|------------------|-----------|
| June 11 - June 5 | 50%       |
| After June 5     | No Refund |

### Block G (June 21 - July 10)

|                   |           |
|-------------------|-----------|
| June 21 - June 25 | 50%       |
| After June 25     | No Refund |

### Block H (July 12 - July 30)

|                   |           |
|-------------------|-----------|
| July 12 - July 16 | 50%       |
| After July 16     | No Refund |

### Block I (August 2 - August 20)

|                     |           |
|---------------------|-----------|
| August 2 - August 6 | 50%       |
| After August 6      | No Refund |

### Block J (June 1 - July 30)

|                  |           |
|------------------|-----------|
| June 1 - June 8  | 60%       |
| June 9 - June 15 | 20%       |
| After June 15    | No Refund |

### Block L (June 21 - July 30)

|                   |           |
|-------------------|-----------|
| June 21 - June 26 | 60%       |
| June 27 - July 2  | 20%       |
| After July 2      | No Refund |

May



Academic Calendar



| Sunday | Monday                       | Tuesday | Wednesday | Thursday | Friday                                                                                                                                                       | Saturday                      |
|--------|------------------------------|---------|-----------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 9      | 10                           | 11      | 12        | 13       | 14                                                                                                                                                           | 15                            |
| 16     | 17                           | 18      | 19        | 20       | 21                                                                                                                                                           | 22<br>University Commencement |
| 23     | 24<br>Holiday - Memorial Day | 25      | 26        | 27       | 28<br>Walk-In Registration for Blocks beginning June 1 C, D, F, J - 9 a.m.-1 p.m. (evening and day classes) Boyden; 5-7 p.m. (evening classes only) Whitmore | 29                            |
| 30     | 31                           |         |           |          |                                                                                                                                                              |                               |

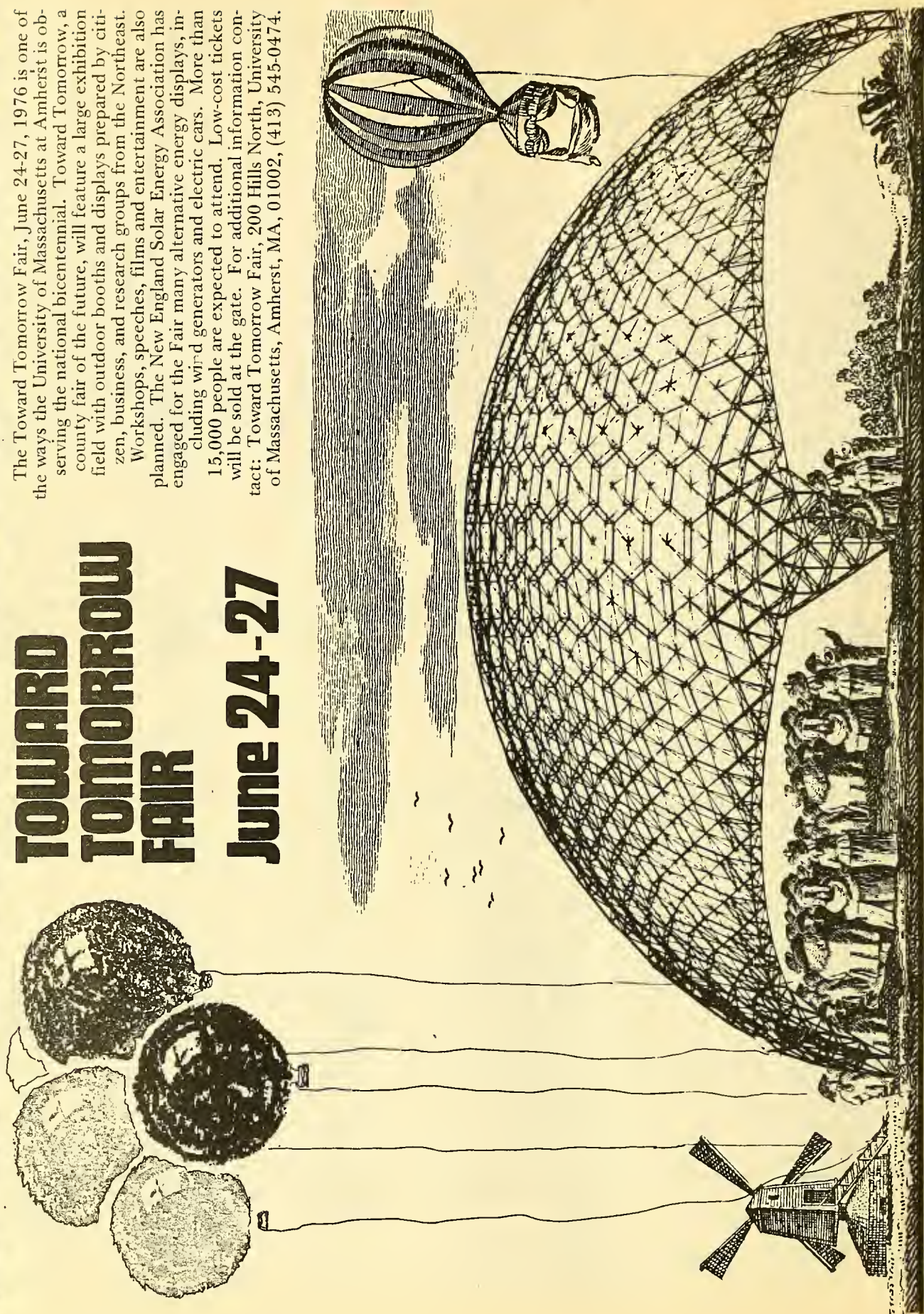


# TOWARD TOMORROW FAIR

## June 24-27

The Toward Tomorrow Fair, June 24-27, 1976 is one of the ways the University of Massachusetts at Amherst is observing the national bicentennial. Toward Tomorrow, a county fair of the future, will feature a large exhibition field with outdoor booths and displays prepared by citizen, business, and research groups from the Northeast.

Workshops, speeches, films and entertainment are also planned. The New England Solar Energy Association has engaged for the Fair many alternative energy displays, including wind generators and electric cars. More than 15,000 people are expected to attend. Low-cost tickets will be sold at the gate. For additional information contact: Toward Tomorrow Fair, 200 Hills North, University of Massachusetts, Amherst, MA, 01002, (413) 545-0474.





# June

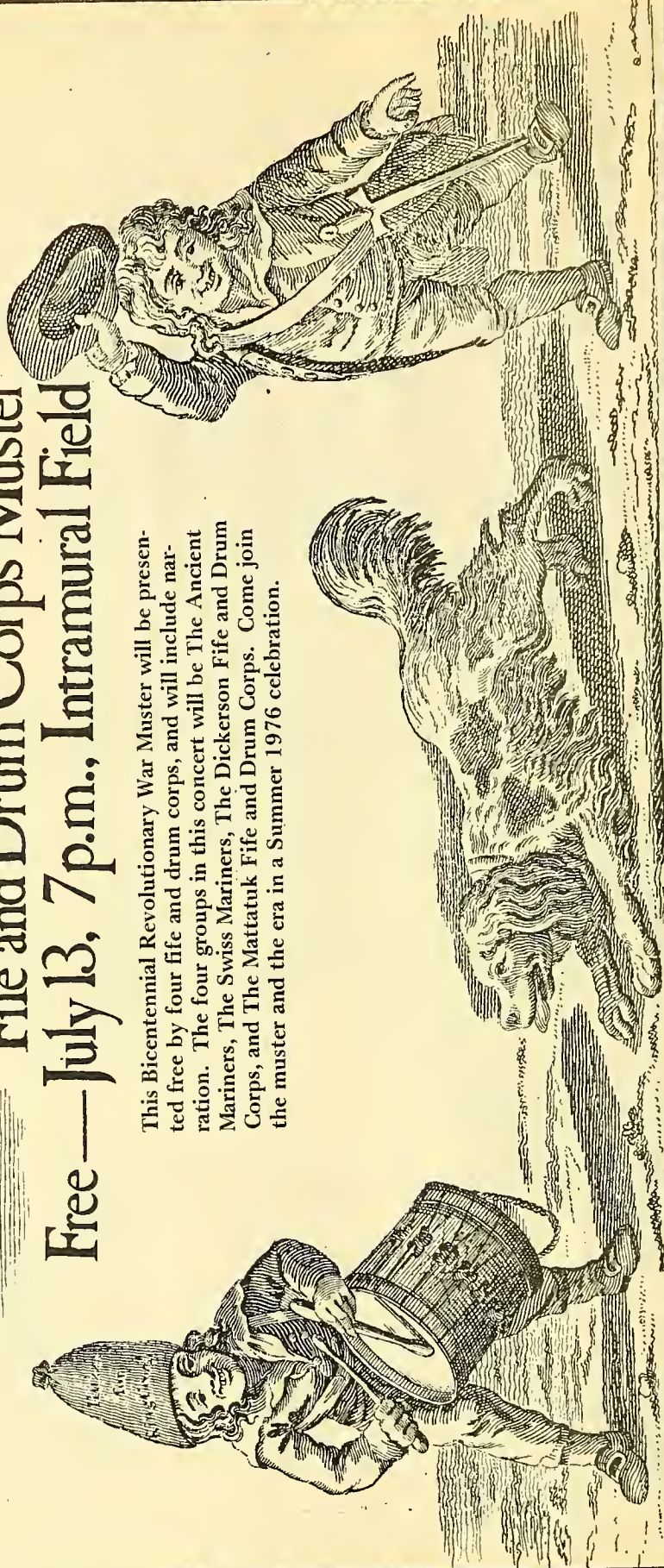


| Sunday    | Monday                                        | Tuesday                                            | Wednesday                                                         | Thursday                                                                       | Friday                                                                                                                                                                                                               | Saturday                                                                                                                |
|-----------|-----------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
|           |                                               | Classes begin for<br>Blocks C, D, F, J<br><b>1</b> | <b>2</b>                                                          | <b>3</b>                                                                       | Evening classes (7-10 p.m.)<br>follow a Monday schedule<br><b>4</b>                                                                                                                                                  | Day classes (Blocks C, D,<br>F, J) follow a Monday<br>schedule<br>End Add/Drop Period<br>for Blocks C, D, J<br><b>5</b> |
| <b>6</b>  | <b>7</b>                                      | <b>8</b>                                           | <b>9</b>                                                          | One-Man Show—Free<br>George Washington Live!<br>8 p.m., C.C. Aud.<br><b>10</b> | End Withdraw (W) Period<br>for Block D<br>Deadline for Mail<br>Registration for Blocks<br>G, L<br><b>11</b>                                                                                                          | <b>12</b>                                                                                                               |
| <b>13</b> | <b>14</b>                                     | <b>15</b>                                          | <b>16</b>                                                         | Nureyev Ballet Film:<br>Don Quixote<br>7:30 p.m., Bowker<br><b>17</b>          | Last day of classes for<br>Block F<br>End "W" Period for<br>Block J<br>Walk-In Registration for<br>Blocks G, L - 9 a.m.-1 p.m.,<br>Whitmore<br>Nureyev Ballet Film:<br>Don Quixote<br>7:30 p.m., Bowker<br><b>18</b> | Nureyev Ballet Film:<br>Don Quixote<br>7:30 p.m., Bowker<br><b>19</b>                                                   |
| <b>20</b> | Classes begin for Blocks<br>G, L<br><b>21</b> | <b>22</b>                                          | <b>23</b>                                                         | <b>24</b>                                                                      | End Add/Drop Period<br>for Block L<br>End "W" Period for<br>Block C<br><b>25</b>                                                                                                                                     | <b>26</b>                                                                                                               |
| <b>27</b> | <b>28</b>                                     | <b>29</b>                                          | Deadline for Mail<br>Registration for<br>Blocks E, H<br><b>30</b> |                                                                                |                                                                                                                                                                                                                      |                                                                                                                         |

# Fife and Drum Corps Muster

## Free — July 13, 7p.m., Intramural Field

This Bicentennial Revolutionary War Muster will be presented free by four fife and drum corps, and will include narration. The four groups in this concert will be The Ancient Mariners, The Swiss Mariners, The Dickerson Fife and Drum Corps, and The Mattatuk Fife and Drum Corps. Come join the muster and the era in a Summer 1976 celebration.



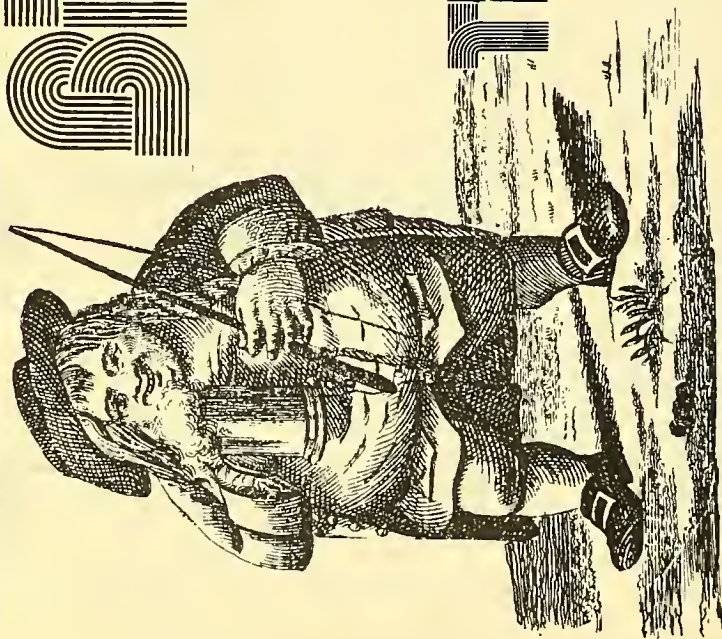


# July

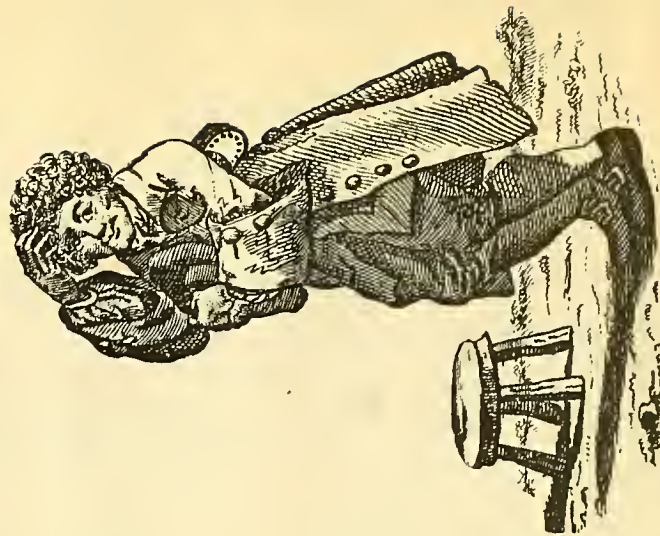
| Sunday | Monday                           | Tuesday | Wednesday | Thursday                                                    | Friday                                                                                                                              | Saturday                                                                                                                                                        |
|--------|----------------------------------|---------|-----------|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |                                  |         |           | One-Man Show—Free<br>Frederick Douglas<br>8 p.m., C.C. Aud. | End "W" Period for<br>Block L                                                                                                       |                                                                                                                                                                 |
|        |                                  |         |           |                                                             |                                                                                                                                     | 3                                                                                                                                                               |
| 4      | Holiday -<br>Independence Day    | 6       | 7         |                                                             | Walk-In Registration for<br>Blocks E, H - 9 a.m.-<br>1 p.m., Whitmore<br>Evening classes (7-10 p.m.)<br>follow a Monday<br>schedule | Last day of classes for<br>Blocks D, G<br>Day classes for Blocks<br>C, D, G, J, L follow a<br>Monday schedule<br>Outdoor Arts & Crafts<br>Festival, Campus Pond |
|        |                                  |         |           |                                                             |                                                                                                                                     | 10                                                                                                                                                              |
| 11     | Classes begin for Blocks<br>E, H | 13      | 14        |                                                             | End Add/Drop Period<br>for Block E                                                                                                  |                                                                                                                                                                 |
|        |                                  |         |           |                                                             |                                                                                                                                     | 17                                                                                                                                                              |
|        |                                  |         |           | Preservation Hall Jazz<br>Band, 8 p.m., Fine Arts<br>Center | End "W" Period for<br>Block E<br>Deadline for Mail<br>Registration for Block I                                                      |                                                                                                                                                                 |
| 18     |                                  | 20      | 21        |                                                             |                                                                                                                                     | 24                                                                                                                                                              |
|        |                                  |         |           |                                                             |                                                                                                                                     | 23                                                                                                                                                              |
|        |                                  |         |           |                                                             | Last day of classes for<br>Blocks H, J, L<br>Walk-In Registration for<br>Block I - 9 a.m.-1 p.m.,<br>Whitmore                       |                                                                                                                                                                 |
| 25     |                                  | 27      | 28        |                                                             |                                                                                                                                     | 30                                                                                                                                                              |
|        |                                  |         |           |                                                             |                                                                                                                                     | 31                                                                                                                                                              |



# BIGGEST REVENUE Three one-man shows



Howard Mann as George Washington June 10, 1976  
 Arthur Berghardt as Frederick Douglas July 1, 1976  
 Tom Noel as Mark Twain August 12, 1976



All shows are free and are held at 8 p.m.  
 in the Campus Center Auditorium



# August

| Sunday | Monday                         | Tuesday | Wednesday | Thursday                                                   | Friday                                                                     | Saturday |
|--------|--------------------------------|---------|-----------|------------------------------------------------------------|----------------------------------------------------------------------------|----------|
| 1      | Classes begin for Block I<br>2 | 3       | 4         | 5                                                          | 6                                                                          | 7        |
| 8      | 9                              | 10      | 11        | One-Man Show—Free<br>Mark Twain<br>8 p.m., C.C. Aud.<br>12 | 13                                                                         | 14       |
| 15     | 16                             | 17      | 18        | 19                                                         | Last day of classes for<br>Blocks C, E, I<br>Last day of<br>Summer Session | 21       |
| 22     | 23                             | 24      | 25        | 26                                                         | 27                                                                         | 28       |
| 29     | 30                             | 31      |           |                                                            |                                                                            |          |



# 12 General Information

## Enrollment

Any person who has graduated from high school or who has a certificate of general educational development is entitled to enroll in undergraduate courses offered through the Summer Session of the University of Massachusetts at Amherst. The University assumes that the student will accurately assess his or her ability to take a college level course. It is the student's responsibility to observe prerequisites for individual courses.

University of Massachusetts undergraduate students under Academic Suspension for the Fall 1976 semester are not relieved of the necessity to take a semester off from the University because they have taken courses in the Summer Session. The suspension is still operative for the Fall semester.

The University invites superior high school students to begin their college education immediately upon graduation by enrolling in the Summer Session. For the highly motivated student, perhaps already convinced that his/her formal education will require graduate or professional studies, an early start may conserve valuable time. Similarly, students in financial need may find it less expensive to complete their undergraduate education in less than four years. Summer Session attendance can substantially reduce the time necessary to obtain a bachelor's degree.

A bachelor's degree is normally required for admission to graduate level courses unless otherwise specified in the catalog or unless written permission to enroll is obtained following counsel with the teaching faculty member.

*Enrollment allows a student to take courses, but does not imply acceptance into a degree program at the University of Massachusetts.*

## How to Register

Advance registration may be accomplished by submitting a registration form by mail with full payment to:

UMass Summer Session  
Post Office Box 835  
Amherst, MA 01002

Course registrations and schedules will be arranged for persons applying by the appropriate date as listed below. Course registrations and scheduling will be handled on a "first come, first served" basis. Although every effort is made to accommodate scheduling requests, the University cannot guarantee enrollment in a particular course section. Early application will help to ensure a preferred schedule and will enable the student to avoid the necessity of attending Walk-In Registration.

Registration forms are included in this catalog and may also be obtained from the Registrar's Office, 213 Whitmore Building, from the Graduate School, Graduate Research Center, or from the Division of Continuing Education, Hills House North, University of Massachusetts, Amherst, MA 01002.

**Advance Registration Procedure—Registering by Mail**

1. Review and select courses from this Summer Session Catalog:
2. Complete Summer Session registration form: Use schedule line numbers and section numbers given in the Schedule of Courses, paying particular attention to the letter codes indicating the schedule *block* in which the courses are being offered. Summer Session is being offered in a series of nine schedule blocks varying in length from three to 12 weeks. See *Description of Codes*.
3. Students currently enrolled at the University of Mas-

sachusetts (Undergraduate, Graduate, Continuing Education, or Boston branch) should include their current student identification number in the appropriate section on the registration form.

4. Mail form and full payment to UMass Summer Session, P.O. Box 835, Amherst, MA 01002, keeping in mind relevant deadlines as listed below.

5. Course changes received prior to the appropriate deadline will be processed. If received later than the deadline, they must be taken care of by the student at Walk-In Registration.

6. All fees must be paid in full at the time of registration.

7. Advance registrations will be confirmed by return mail during the week prior to the beginning of each block. Confirmations will be mailed to the student's local address if it is an off-campus address, otherwise to the student's permanent home address.

### *Deadlines for Advanced Registration*

|               |                                                     |
|---------------|-----------------------------------------------------|
| Wed., May 19  | For classes beginning June 1<br>(Blocks C, D, F, J) |
| Fri., June 11 | For classes beginning June 21<br>(Blocks G, L)      |
| Wed., June 30 | For classes beginning July 12<br>(Blocks E, H)      |
| Fri., July 23 | For classes beginning August 2<br>(Block I)         |

### **Walk-In Registration**

| Dates          | Blocks                                              | Location                        |
|----------------|-----------------------------------------------------|---------------------------------|
| Thurs., May 27 | Evening classes only, beginning June 1<br>(Block J) | Whitmore Bldg.<br>5-7 p.m.      |
| Fri., May 28   | Classes beginning June 1<br>(Blocks C, D, F, J)     | Boyden Gym<br>9 a.m.-1 p.m.     |
| Fri., June 18  | Classes beginning June 21<br>(Blocks G, L)          | Whitmore Bldg.<br>9 a.m.-1 p.m. |
| Fri., July 9   | Classes beginning July 12<br>(Blocks E, H)          | Boyden Gym<br>9 a.m.-1 p.m.     |
| Fri., July 30  | Classes beginning Aug. 2<br>(Block I)               | Whitmore Bldg.<br>9 a.m.-1 p.m. |

### **Thesis, Dissertation, Special Problems and Independent Study Credit**

1. *Graduate students* contemplating Special Problems, Thesis, or Dissertation course work (700, 800, 900 course numbers) during the Summer Session or *undergraduates* contemplating Independent Study (385, 386 or UWW) should seek the permission of the appropriate department heads and/or advisors.

2. Complete Summer Session Registration Application form using the space designated *Thesis, Dissertation, Special Problems and Independent Study Only*. Schedule line numbers will be available at the appropriate departmental offices and at the Summer Session Registrar's Office, Whitmore Building. (A student who fails to register properly for such work will not receive an identification card and is not entitled to use University facilities during the Summer Session.)

3. Payment must be made in full at the time of registration. University tuition rates (not Summer Session course fees) will apply to all Special Problems, Thesis, Dissertation and Independent Study registrations. See *Expenses*.

4. Independent Study, Graduate Special Problems, Thesis and Dissertation Credit have different in-state and out-of-state tuitions. A Certificate of Residence must be on file or submitted with registration for students applying for the in-state tuition rate.

5. Students may register for Thesis, Dissertation and Special Problems during any of the nine calendar blocks



of the Summer Session. However, all such registrations should be listed under the designation of *K* block.

### Change of Program

Students wishing to add or drop courses, or withdraw from the Summer Session, must formally notify the Summer Session Registrar's Office in writing by mail or in person during regular office hours. Notifying the instructor or ceasing to attend class does not constitute official withdrawal. Failure to use proper procedures could result in an "F" being recorded as a final grade. Students dropping courses during the refund period will receive refunds only if proper procedures are followed.

#### Course Changes

1. Course changes may be made at Walk-In Registration or at Summer Session Registrar's Office after Walk-In Registration. (Observe deadlines listed below and in the *Academic Calendar* section of this Catalog.)
2. Review and select courses from this Summer Session Catalog.
3. Complete course Add-Drop form, available at Summer Session Registrar's Office, Whitmore Building.
4. Secure departmental approval signature and have name entered on class roster before having the Registrar's Office review the form.
5. Pay any remaining bill at Bursar's Office.
6. Submit completed course Add-Drop form (with Bursar's clearance stamp) to Summer Session Registrar's Office.

#### Add Period Deadlines

Students may add a course with written permission of the instructor through the first week for courses of six or more weeks duration.\*

#### Drop Period Deadlines

1. Students may drop a course with no record through the first week for courses of six or more weeks duration.\*
2. Students may drop a course with a "W" from the first week to a period not to exceed one-third of the duration of the course, for courses of six or more weeks.\*
3. Courses dropped after the first one-third of the duration of the course will receive an "F" unless a retroactive withdrawal ("W") for extenuating circumstances is approved by the Academic Dean.\* (Applies to undergraduate students only.)

Consult the *Academic Calendar* in this catalog for specific add, drop, and withdrawal deadline dates. The above policy applies to all undergraduate and graduate students attending the Summer Session, except where specified otherwise.

### Cancellations

All University Summer Session courses are funded by course fees. In the event that instructional costs cannot be met due to underenrollment, any course may be cancelled at the discretion of the Summer Session Director. Undergraduate courses are subject to a minimum enrollment of 10 students, graduate courses to five students, and double numbered, undergraduate/graduate, to 10 students.

Students who are affected by a course cancellation due to underenrollment, and who do not wish to enroll in alternative courses will receive a refund for the cancelled course. Registrations are handled on a first come, first served basis; students are advised to register early.

*\*In the case of the three-week sessions, add, drop, and withdrawal deadlines will be determined on a proportional basis by the individual Academic Dean. Visiting summer students and Continuing Education students secure approval of the Director of Summer Session, Hills House North.*

### Identification Cards

#### University Students

Regularly enrolled Undergraduate, Graduate, Continuing Education, and Boston branch students may obtain a Summer 1976 *validation sticker* for their picture identification cards at the ID Office, Knowlton House Basement, Monday through Friday, 9 a.m. to 4 p.m., or at any of the scheduled Summer Walk-In Registrations. Students are required to present their summer schedule card as proof of registration.

#### Visiting or New Students

Summer visiting or new students may have pictures taken for *temporary summer identification cards* at the ID Office Knowlton House Basement, Monday through Friday, 9 a.m. to 4 p.m., or at any of the scheduled Summer Walk-In Registrations. Students are required to present their summer schedule card as proof of registration, as well as one other form of identification. Students who have not pre-registered by mail must wait 24 to 48 hours after completing registration for the assignment of a student number before they may have their ID picture taken. ID cards may be picked up at the ID Office 24 hours after having the picture taken.

## Academic Credit

### Credit for Summer Work

All courses offered in the Summer Session carry degree credit and are equivalent to courses offered at the University during the regular academic year unless specified otherwise. Credits obtained in these courses are ordinarily accepted as transfer credits by other colleges and universities.

Students who are registering for graduate level work during the Summer Session and who desire to pursue an advanced degree at the University must file an application for admission with supporting documentation at the Graduate Admissions Office. Once admitted to a degree program, a student may transfer a maximum of six graduate credits earned prior to admission into that program.

### Grades

All grade reports for the Summer Session will be mailed to students at the end of August after the close of the entire 12-week Summer Session. Transcripts will not be available for the shorter sessions until this time. Submit transcript requests to the appropriate Records Office as indicated below.

A permanent record of courses taken in the Summer Session will be maintained by the following administrative units:

For admitted and visiting undergraduates at the Amherst campus—*Amherst Undergraduate Records Office, 213 Whitmore Building.*

For admitted and visiting graduate students at the Amherst campus—*Graduate Records Office, Graduate Research Center.*

For admitted Boston campus students—*Boston Campus Records Office.*

For previously enrolled Continuing Education students—*Continuing Education Records Office, Hills House Front Lobby.*

## 14 General Information

### Overload of Credits

A maximum course load is considered to be 12 credit hours of University work for undergraduates, nine credit hours of University work for graduate students, for the 12-week Summer Session. Students who wish to register for additional credits must secure approval as follows:

#### Undergraduates

1. Undergraduates pick up Summer Overload Request form at the Registrar's Office, 213 Whitmore Building.
2. University students secure a signature of their Academic Dean; previously enrolled Continuing Education students secure signature of the Continuing Education Director or of Student Services, Hills House North; visiting students secure signature of the Director of Summer Session, Hills House North.

3. Return form to Summer Session Registrar, Whitmore Building.

*Note:* A senior graduating in summer or the following January may register for 15 credits without extra permission.

#### Graduate Students

1. Secure approval of the Director of Graduate Studies in major department.
2. Return approval to Summer Session Registrar, Whitmore Building.

### Thesis, Dissertation, Special Problems and Independent Study Credit

Graduate students contemplating Special Problems, Thesis, or Dissertation course work (700, 800, 900 course numbers) during the Summer Session or undergraduates contemplating Independent Study (385, 386 or UWW) should seek the permission of the appropriate department heads and/or advisors. Schedule line numbers will be available at the appropriate departmental offices and at the Summer Session Registrar's Office. University tuition rates (not Summer Session course fees) will apply to all such registrations. See *Expenses*. A student who fails to register properly for such work will not receive an identification card and is not entitled to use University facilities during the Summer Session.

### Auditing

A student who intends to audit a course must register and pay the stated fees. There is no special audit fee. A student may not change from graded to audit status after the end of the Add/Drop Period. See *Change of Program Deadlines*. Requests for audit status should be submitted to the Summer Session Registrar's Office, Whitmore Building.

### Pass/Fail Option

A regularly enrolled undergraduate student must be enrolled for six credit hours during the Summer Session to use his/her pass/fail option, unless he or she is an Education major. A non-Education major taking a course in Education may elect one other outside pass/fail course. Graduate students wishing to use the pass/fail option should consult both the Graduate School and the appropriate academic department.

### Pass/Fail Policy, School of Education

All courses given under the supervision of the School of Education, both graduate and undergraduate, are graded on a pass/fail basis only. This is not optional on the part of the student except in the following special case. Master's Degree students enrolled at the University of Massachusetts are re-

quired by Graduate School policy to earn 18 graded credits during their 33-hour Master's program. A student eligible to receive a letter grade should make the request known to the instructor early in the semester so that the grade may be added to the roster at the end of the course.

Please do not request exceptions to the pass/fail policy. The School of Education understands that there may be a number of institutions which simply do not accept the pass/fail mark. In these cases, the student should contact the instructor and request a letter which states that the School of Education is on a pass/fail basis but indicates what the grade would have been if the student had been taking the course for a letter grade.

If further information is desired regarding the School of Education pass/fail policy, call or write Michael G. Schwartz, 125B School of Education, University of Massachusetts, Amherst, MA 01002, phone 545-2701.

### Core Requirements, Undergraduate Students

Courses which may be applied toward completion of University of Massachusetts core requirements are designated by a capital letter, in parentheses, following the course title: e.g., Rhetoric (B); Humanities (C); Social/Behavioral Sciences (D); Math/Natural Sciences (E).

## Expenses

Students are urged to preregister by mail to help ensure a preferred schedule and to enable the student to register without attending Walk-In Registration. *Full payment must accompany registration.*

Make checks payable to: University of Massachusetts  
Mail to: Summer Session  
Box 835  
Amherst, MA 01002

#### Fee Waivers

Waivers for University employees, cooperating teachers, graduate assistants, associates and fellows, and State and Community College faculty may be applied to all course fees. Fee waivers apply only to course fees and do not cover the Summer Services Fee or other expenses such as lab fees.

### General Fees

#### Course Fees

*Undergraduate*—\$25/credit

*Graduate*—\$40/credit

Massachusetts residency does not affect the above course fees.

#### Summer Services Fee

A Summer Services Fee of \$6.50 per week will be assessed of each student registering for credit courses. This fee is charged for each week of enrollment. For example, a student registering for one course in Block F (three weeks), and also for courses in Block D (six weeks), will be assessed 6 weeks times \$6.50 to equal \$39. A valid ID will be issued for the period of time during which the student is enrolled.

Summer Services Fee entitles student to services and programs provided by the University Health Center, Campus Center and Summer Activities Office. See *Student Services* and *Student Affairs*.

---

#### Thesis, Dissertation, Special Problems and Independent Study Credit—Tuition

Students applying for Thesis, Dissertation, Special Problems and Independent Study Credit pay tuition on an in-



state and out-of-state basis. A Certificate of Residence (see Index) is included in this catalog, and must be on file or submitted with registration. Valid tuition waivers may be applied.

|               | <i>In-State</i> | <i>Out-of-State</i> |
|---------------|-----------------|---------------------|
| Undergraduate | \$15/credit     | \$77.50/credit      |
| Graduate      | \$22.50/credit  | \$45/credit         |

## Summer Services Fee

A Summer Services Fee is required of all Thesis, Dissertation, Special Problems and Independent Study students at the rate of \$6.50 per credit. A valid ID will be issued for a period equal to one week per credit.

## Optional Fees

### Housing and Food Services Fee

See *Student Services and Student Affairs*.

### Physical Education Fee

Students may pay a \$5 Physical Education Fee, which entitles the student to the use of all PE facilities (pool, bowling alley, gym) as scheduled by the Physical Education Department. A locker or basket may be obtained on a space-available basis. All services and facilities are regulated by the Physical Education Department.

Payment of the fee should be made to the Ticket Office in Boyden Gymnasium, and the receipt taken to the Intramural Office where a Physical Education ID card will be issued.

### Parking Fees and Expenses

Vehicles presently registered in the Balanced Transportation and Parking System may park in their assigned lot or any edge lot.

Vehicles that are not registered must be registered with the Transportation and Parking Office, Room 1, Munson Hall, office hours 8:30 a.m. to 4 p.m. The registration fee is \$5, and enables the vehicle to use all edge lots: 21, 22, 23, 24, 25, 26, 31, 32, 34, 44, 46, 47, 48, 49, 50. If an individual wants to register a vehicle for a core lot, the cost is a \$5 registration fee plus the monthly convenience fee of \$3 for a core lot, and \$4.20 for lot 71.

### Bus Transportation

The Student Senate Transit Service will provide regularly scheduled free bus transportation during the Summer Session. It is anticipated that buses will serve students commuting from Belchertown, South Amherst, North Amherst, Sunderland, South Deerfield and points in between on all weekdays when classes are in session. Sufficient buses will be scheduled to transport students to the campus in the morning, to outlying points, return at midday, and home at the end of the day. For bus service information, call 545-0056.

# Student Services and Activities

## Summer Activities

Each year the University of Massachusetts Summer Activities Committee offers a varied and balanced presentation of the arts, intramural sports, and recreational activities. The Summer 1976 program is planned to include an outdoor arts festival, Bicentennial activities, musical concerts, and traveling art exhibits. A film series provides at least one film a week. Organized sports include softball, volleyball, tennis, and badminton. Individual participation is encouraged for swimming, outing trips, and picnics. The student radio station (WMUA)

and a summer newspaper will provide detailed information about activities, both on campus and in the Pioneer Valley.

Details of the summer program events and ticket information will be available at registration, and in the Summer Activities Office, or by calling 545-2351.

## Undergraduate Advising

General academic advising will be available to Summer Session students from College and School undergraduate academic advising staffs. Appointments are not necessary in all cases, but are recommended in order to ensure prompt attention. Counseling staff, hours, and locations, as well as telephone numbers are listed below.

### College of Arts and Sciences

James W. Shaw, Julie Berwald: Machmer E-22, 545-2191

CASIAC office hours are Monday-Friday, 9 a.m.-4 p.m.

Special advising for summer session students will be available Tuesday, June 1, and Friday, June 28.

### School of Business Administration

Nelson E. Pion, John C. Morand: SBA 211, 545-2852 Monday-Friday, 9 a.m.-5 p.m.

### Division of Continuing Education

Jackie S. Posner: Hills House North 100A, 545-3430

Joan P. Eignor: Hills House North 101, 545-3430

Harry F. Neunder: Hills House North 103, 545-3430

Counseling is available Monday-Thursday, 8:30 a.m.-7 p.m., and Friday, 8:30 a.m.-5 p.m.

### School of Education

Michael G. Schwartz: School of Education Building 125B, 545-2701

Information and advice on teacher certification programs may be obtained—appointments please. Hours are Monday-Friday, 9 a.m.-5 p.m. The office will be closed on those days when summer counseling for new students takes place.

# nureyev

## ballet film: don quixote

June 17, 18, 19

7:30 p.m.

Bowker Auditorium

Tickets:

UMass students  
with valid ID \$2

Others \$3



Rudolf Nureyev and Lucette Aldous are joyous lovers in the film version of "Don Quixote." The two stars are joined by Robert Helpmann and the Australian Ballet in the title role of the Walter Reade presentation.



# 16 General Information

## School of Engineering

Melton M. Miller, Joseph S. Marcus: Engineering East  
201, 545-0300

Monday-Friday, 9 a.m.-5 p.m.

## College of Food and Natural Resources

Ernest M. Buck: Stockbridge Hall 102, 545-2890, and  
545-1969

Monday-Friday, 8:30 a.m.-4:30 p.m.

Most regularly enrolled students in the College are assigned faculty advisors in their chosen majors. Supplementing this primary advising program is a central, undergraduate academic counseling center located in Room 102, Stockbridge Hall, where all students may acquire general information about academic programs and regulations, and may seek assistance with specific academically related problems.

## School of Health Sciences

Howard Peters: Public Health N231, 545-2177

Monday-Friday, 9 a.m.-4 p.m.

## School of Physical Education

Margaret A. Coffey: Boyden 224, 545-2338

Hours by appointment.

## Housing and Food Services

University residence halls will be available to students wishing to live on campus during the Summer Session. Information and applications may be obtained from the University Housing Office, Whitmore Building.

Residence halls will be open for occupancy on the day immediately preceding registration.

All residence hall rooms are provided with basic furniture, including beds and mattresses, desks, desk chairs, lounge chair, waste baskets, and bulletin boards. Each student is responsible for providing ashtrays, pillows, bed linen, blankets, and towels. Linen service may be obtained by contract with a private linen service.

Those students electing to reside off campus may obtain housing information by writing to the Housing Office, Whitmore Administration Building, University of Massachusetts, Amherst, MA 01002.

The University Food Services will offer a 10-meal or a 15-meal ticket during the Summer Session. The menu for these meal tickets is multi-selective with seconds on all menu items except the entree. Food may be purchased on a cash basis at snack bars in the Campus Center and in Worcester Dining Commons. Food tickets will be honored at Franklin Dining Commons.

## General Financial Assistance

### Eligibility

The Financial Aid Office will accept applications for assistance during the Summer Session 1976. All students must carry at least six credits to be eligible. Assistance is contingent upon good academic standing, therefore students on suspension are *not* eligible.

Consideration will be given to full-time University of Massachusetts students and Continuing Education students who were enrolled prior to the 1976 Summer Session.

### Kind of Assistance

Most of the aid funds available will be in the form of National Direct Student Loans.

### Deadlines

Application deadline for University students is May 3. Continuing Education students are expected to complete their applications by May 17. Applications for University students are available in the Financial Aid Office, 243 Whitmore Building. Applications for Continuing Education students may be obtained from the Division of Continuing Education, Hills House North. UMass students may call 545-0801, and Continuing Education students 545-3430, for further information.

### UMass

Applications: Financial Aid Office  
Deadline: May 3  
Phone: 545-0801

### CE

Hills House  
May 17  
545-3430

## Veterans Benefits

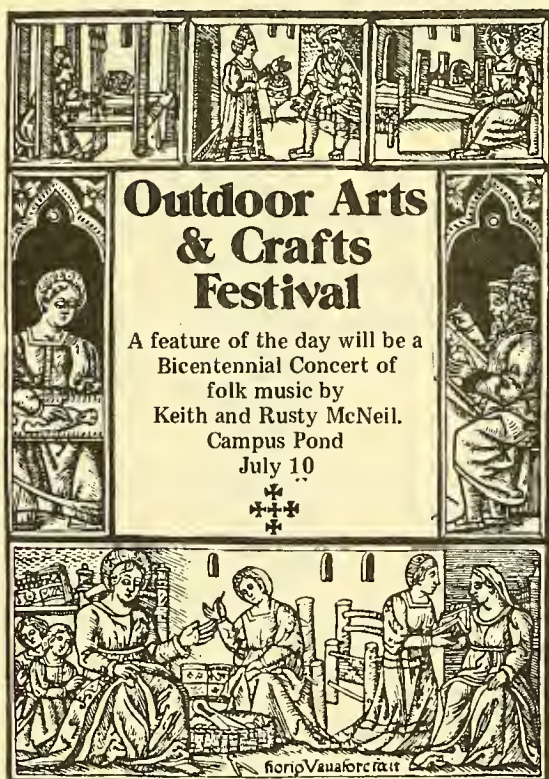
Veterans are eligible to receive full-time benefits for carrying a minimum of 2 credits for a three-week session, 4 credits for a six-week session, 6 credits for the nine-week session and 8 credits for the twelve-week session. If a veteran takes less than the minimum amount of credits for full-time status, his/her monthly benefits will be adjusted accordingly.

Veterans eligible for a state tuition waiver during the school year may be eligible for a tuition waiver for summer school.

To receive these benefits, veterans should contact the Veterans Affairs Office, 236 Whitmore Building, (413) 545-1346, eight to ten weeks prior to the beginning of the particular summer session block(s) to allow ample time for processing paperwork.

## Law Enforcement Education Program

Limited funding may be available for in-service law enforcement officers under LEEP. Applications may be obtained in the Continuing Education Records Office, Room 100, Hills House North, or the Financial Aid Office, 243 Whitmore Building. Completed applications for Continuing Education students should be returned to Harry Neunder, 103 Hills House North, and for UMass students, applications should be returned to the Financial Aid Office, 243 Whitmore.





## Student Affairs

Student Affairs, under the direction of Vice Chancellor Robert W. Gage, provides services for students' non-academic needs. Student Affairs offices and departments, with a brief description of services, are listed in this section.

### Admissions, Records, and Financial Aid

Dean of Admissions, Records, and Financial Aid  
Dr. William D. Tunis, 255 Whitmore (5-0222)

#### Undergraduate Admissions

Director: Robert J. Doolan  
255 Whitmore (5-0222)

The Admissions Office is responsible for all administrative procedures with respect to undergraduate admissions to the University including liaison with high school guidance counselors and admissions standards set in coordination with the Faculty Senate, Provost and other academic departments.

#### Transfer Affairs

Director: Eli Sherman  
208 Whitmore (5-0860)

The Office of Transfer Affairs serves as a general resource center for all matters pertaining to the transfer process. One of the major functions of the office is to work with academic departments on campus and at the community colleges in a cooperative effort to provide smooth transition for the transfer student in academic programs from one institution to the other.

#### Registrar

Registrar: Ralph D. Jones  
213 Whitmore (5-0555)

The Registrar's Office is responsible for enrollment and registration of undergraduates, administrative procedures relating to course loads (adding and dropping courses), course of study, withdrawals, producing grade reports, transcripts, records of matriculation, maintaining permanent academic record cards and related activities.

#### Financial Aid

Director: Richard A. Dent  
232 Whitmore (5-0801)

The Office assists students with financial counseling and also aids in finding suitable employment, awards, loans, grants, scholarships, and assigning part-time work. The Financial Aid Office is responsible for administering all federal, state and private financial aid for the Amherst campus as well as coordinating all student employment. The Financial Aid Office also has information concerning area employment, scholarships, loans, etc. Students are advised to apply early for all financial aid.

### Campus Center

Acting Director: William F. Field  
Room 818, Campus Center (5-0585)

The Campus Center Director administers and coordinates the policies of the Campus Center Complex (which includes the Student Union Building and the new Campus Center). The duties include close coordination with the Campus Center Governing Board, serving on various committees concerned with student services, and supervision of the Campus Center Complex staff and services. Major areas of responsibility include the University Store, Campus Center Food Services,

Lobby and Games Area, Campus Center Overnight Accommodations, Parking Garage, Print Shop, and Conference Operations.

### Department of Public Safety

Director: David L. Johnston  
Dickinson Hall (5-3111 emergency, 5-2121 business)

The Department of Public Safety is made up of the University Police, the Security Guard force and the University of Massachusetts Police Training Institute. The Department works in conjunction with federal, state and local law enforcement agencies to provide high quality law enforcement.

The campus security force is responsible for the security of University property, parking control, emergency transportation of sick and injured, and guard services.

University Police Officers are responsible for the public safety of all persons within the physical boundaries of the University campus.

The Guards are assigned to parking control during the day and patrol of the residence hall areas at night. They may request unauthorized persons to leave buildings after normal closing hours and assist authorized persons to enter buildings.

*Anti-Crime Programs:* the Department of Public Safety cooperates with the National Operation Identification Program. Students, faculty, and staff may borrow an engraving tool for 24 hours and place their social security numbers on their valuables. Bicycle registration is conducted bi-annually in the spring and fall. Registration is free. Social security numbers are engraved on bikes, a decal is attached, and advice is given on locks.

*Sensitive Crime Units:* in response to the needs of University and community women, the Department of Public Safety formed this specialized unit to deal with rape, attempted rape, exhibitionists, harassment, and obscene phone calls. Trained male and female officers are available to victims 24 hours a day to counsel and aid with compassion and sensitivity. Victims may report a crime anonymously; they may leave a description of the criminal and help prevent other women from becoming victims. The Department provides full referral services for counseling, medical treatment, and aftercare. Please call 545-COPS.

In accordance with the provisions of the Code of Student Conduct, student ID cards or other means of identification must be shown upon request to any properly identified member of the Department of Public Safety, to enable him/her to perform assigned duties.

The Department of Public Safety is located behind Thompson Tower and is staffed 24 hours a day.

### Health Services

Director: Barry Averill  
Health Center (549-2671)

The Health Services, supported principally through a Summer Services fee, is organized to help prevent or treat health problems.

#### Medical Care

Medical Director: Dr. Thomas McBride

Students may seek unlimited consultations with the physicians, nurse practitioners, and specialists in the outpatient unit of the Health Services. Students may consult with one of these staff members on a walk-in basis or by phoning for an appointment (549-2600). Specialty services such as x-ray, laboratory, medical records, pharmacy and physical therapy are located in the Health Center. Emergency treatment is available 24 hours a day. The Health Center is also a hospital providing bed care for students with more serious illnesses.

Vision examinations are available on a co-payment basis.

# 18 General Information

The details of medical problems are held in strict confidence and will not be released to anyone without the patient's written permission."

## Division of Mental Health

Director: Dr. Leighton Whitaker (5-2337)

Life at the University can sometimes become a perplexing experience, and it may be helpful to talk out feelings, sort out confusion, and develop new perspectives with a member of the Mental Health staff. Psychiatrists, clinical psychologists, and social workers are available for short term one-to-one consultations, and they also provide group therapy and couples consultation when appropriate. As part of the Summer Services fee, students are entitled to consult with any of the staff. No referral is needed and records are confidential.

## Division of Health Education

Director: Jane Zapka

The Health Education staff provides a broad range of programs aimed at developing individual and community responsibility for promoting optimal health. Discussions and workshops are offered to the community on such topics as nutrition, women's health, sexuality and alcohol. Opportunities for consumer activity include the Student Health Advisory Board.

## Division of Dental Health

Director: Dr. Henry Lubin

The Dental Health Division provides emergency dental care, initial examination and dental education services as part of the health fee. Routine restorative care is available on a modified fee-for-service basis as time permits. Removal of impacted teeth will be offered through the Health Center or by referral to a participating surgeon on a co-payment basis.

## Division of Environmental Health and Safety

The Environmental Health and Safety Division provides continuous surveillance of various campus situations, such as housing, food services, and fire and radiation protection.

## Housing Office

Director: J. Bruce Cochrane  
235 Whitmore (5-2100)

Housing in the University's residence halls will be provided to students seeking such accommodations. Students seeking residence hall housing during Summer Session should contact the Housing Office, Whitmore Building, for further information.

## Student Activities

Acting Coordinators: James Riley, Armand Demers  
Student Union (5-2351)

Student Activities, which is comprised primarily of the Recognized Student Organizations (RSO) Office and the Program unit, is responsible for working with student organizations and governance groups in all areas of program development and implementation, business and financial affairs of student groups, and development of policies and resources relevant to the activities and services of students and student groups. Currently there are approximately 500 student groups representing the areas of social action organizations, publications, communications media, residence halls, student government, and special interest groups such as cultural, educational, recreational, social, religious, and political organizations.

The major emphases of the Student Activities operation are:

1. the personal development and education of students

through counsel and training regarding leadership and organizational development, problem-solving, decision-making, effecting change, and interpersonal relationships within organizations;

2. advice, practical experience, and development of skills in such areas as accounting, budgeting and other business practices;

3. provision of a computerized bookkeeping system in support of RSO groups;

4. providing resource materials and counsel regarding budgeting, purchasing, contracting, program selection and planning;

5. the presentation of a wide spectrum of quality services and events for students and the University community.

## Student Development Center

Director: Sally Freeman  
Berkshire House (5-2700, 5-0333)

The Student Development Center provides personal, social, educational and career counseling and placement services to present and past students.

Students have utilized the Center's resources in regard to developmental concerns, personal difficulties and decision-making career and educational matters. The Center maintains, as well, a new student counseling program. Still others have come to consult on research design, test and questionnaire construction, human consciousness, humanistic psychology, and interpersonal communication. All are assured of confidentiality on personal matters discussed with Center staff.

The career planning services of the Student Development Center include vocational counseling and career development services to undergraduates, graduates, and alumni. Informal testing is occasionally used to assist students with remedial problems, to aid in the identification and development of personal and vocational goals and objectives, and to begin a student's career. Applications and information for all National Testing Programs are available and include GRE, LSAT, MCAT, MTE, MAT, and CLEP.

A resource library in the Center provides occupational information, industrial literature, graduate school information, and self-help career aids.

The Center maintains a credential service with up-to-date files of personnel records, developmental resumes and letters of recommendation. Information is also available on local, specialized and out-of-state teacher certification requirements.

## Veterans Affairs

Director: Francis X. Cotter, Jr.  
236 Whitmore (5-1346)

The Veterans Affairs Office provides assistance and coordinates paperwork for students eligible for educational benefits through the Veterans Administration, either as veterans or as children of deceased or disabled veterans. Applicants should present certification of eligibility at registration. If already receiving benefits, they should enroll again for them. Generally, the Veterans Office provides special assistance to the veteran in the areas of housing, part-time work, short-term loans, academic and financial counseling, disabled veterans programs, and opportunities for state and federal benefits. Veteran outreach services are also provided.

# register by mail

Full payment is mandatory at time of registration.



# REGISTRATION APPLICATION-SUMMER SESSION-AMHERST

1976

SPECIAL NOTICE - Admission to the Summer Session in no way implies admission to a regularly scheduled semester (fall or spring) of the University.

Name: LAST NAME FIRST NAME INITIAL  
 C-Z-A-D-S  
 Home Address: BA1  
 CITY STATE ZIP CODE  
 Home Tel. AREA CODE NUMBER STREET CITY STATE ZIP CODE  
 Summer Local Address: BA2  
 AREA CODE NUMBER STREET CITY STATE ZIP CODE

PLEASE CODE APPROPRIATE BOXES  
 A ☐ 'G'-Graduate ☐ 'N'-Non-Vet  
 A ☐ 'S'-Undergrad ☐ 'V'-Other Vet  
 F ☐ 'M'-Male ☐ 'F'-Female  
 'S'-Single ☐ 'M'-Married ☐ 'O'-Divorced ☐ 'W'-Widowed  
 'C'-Citizen ☐ 'U'-Not Citizen  
 'U'-Undergrad ☐ 'G'-Graduate  
 'M'-Mass. Res. ☐ 'O'-Other State  
 'F'-Foreign  
 BIRTHDATE: month day year  
 Social Security Number  
 A

REGULAR UNIVERSITY STUDENTS:  
 Student Number: ☐  
 CAMPUS: 'U' - UGrad-Amherst  
 'E' - Cont Ed-Amherst  
 'B' - Boston Campus  
 'Z' - Visiting Student  
 CLASS

BLOCK 1 - UNDERGRADUATE FROM BOSTON CAMPUS  
 This certifies that the student has been enrolled at the Boston Campus and has our approval to take courses listed.  
 Record Clear: ☐ Yes ☐ No  
 (If No, state nature of encumbrance)

Advisor's Signature  
 Registrar's Signature

CHECK AND COMPLETE ONE OF THE FOLLOWING APPROPRIATE ITEMS:  
 1. Currently enrolled University of Massachusetts student:  
 Campus - ☐ Amherst ☐ Boston (complete Block 1)  
 Campus - ☐ Amherst ☐ Boston (complete Block 1)  
 Date of last attendance: \_\_\_\_\_  
 2. Accepted as a new University of Massachusetts student:  
 3. Accepted as a new University of Massachusetts student: ☐ Undergrad ☐ Grad  
 4. ☐ A summer visiting student only

## SAMPLE

|             |        |            |       |            |      |               |    |              |                         |         |   |            |            |            |            |
|-------------|--------|------------|-------|------------|------|---------------|----|--------------|-------------------------|---------|---|------------|------------|------------|------------|
| Schedule No | 341529 | Department | RHEIT | Course No. | 105A | Section/Block | 1C | Course Title | ENGL AS A 2ND LANG/LEEN | Credits | 3 | X \$ 25.00 | per credit | = \$ 75.00 | Course Fee |
| Schedule No |        | Department |       | Course No. |      | Section/Block |    | Course Title |                         | Credits |   | X \$       | per credit | = \$       | Course Fee |
| Schedule No |        | Department |       | Course No. |      | Section/Block |    | Course Title |                         | Credits |   | X \$       | per credit | = \$       | Course Fee |
| Schedule No |        | Department |       | Course No. |      | Section/Block |    | Course Title |                         | Credits |   | X \$       | per credit | = \$       | Course Fee |

TOTAL COURSE FEES \$

Thesis, Dissertation, Special Problems and Independent Study Only

|             |  |            |  |            |  |               |   |              |  |         |  |      |              |   |         |
|-------------|--|------------|--|------------|--|---------------|---|--------------|--|---------|--|------|--------------|---|---------|
| Schedule No |  | Department |  | Course No. |  | Section/Block | K | Course Title |  | Credits |  | X \$ | Tuition Rate | = | TUITION |
|-------------|--|------------|--|------------|--|---------------|---|--------------|--|---------|--|------|--------------|---|---------|

OFFICE USE ONLY

FULL PAYMENT MUST ACCOMPANY MAIL REGISTRATION  
 Make checks payable to:  
 University of Massachusetts  
 Send to:  
 Summer Session 1976  
 P.O. Box 835  
 Amherst, MA 01002

SUMMER SERVICES FEE \$  
 (\$6.50 x \_\_\_\_\_ weeks required of all students)  
 TOTAL AMOUNT DUE \$  
 AND ENCLOSED

## Course Selection

The University of Massachusetts Summer Session has been designed to provide maximum flexibility for all students. Courses have been scheduled in blocks of three, six, nine and twelve weeks. Each block has been labeled with a letter from C through L. A special K block has been designated for courses independently scheduled. (For information about block K, see *Thesis, Dissertation, Special Problems and Independent Study Credit*.)

A special Block Schedule has been provided for the convenience of the student on page 4 of this catalog to facilitate selection of courses since some are offered consecutively, some are offered concurrently, while others may appear in more than one block.

It is the student's responsibility to select courses with schedules that do not conflict and to design a program free from error.

Courses are listed in the following manner:

### Course Numbers

|         |                                                                      |
|---------|----------------------------------------------------------------------|
| 000-099 | non-credit courses; non-quality point courses; entrance deficiencies |
| 100-199 | undergraduate credit only-Lower Division                             |
| 200-399 | undergraduate credit only-Upper Division                             |
| 400-499 | professional courses which presume a bachelor's degree               |
| 500-699 | graduate credit only; courses corresponding to 200-399 series        |
| 700-999 | graduate level courses                                               |

### Credit

When a course carries two numbers, for example 267/567, it means the course is being offered for either undergraduate and graduate credit. It is important that students indicate only one of these numbers—the one corresponding to the level of credit desired.

All courses carry three credits unless otherwise indicated. In cases of specifically arranged hours, the student and instructor must agree on the number of credits to be earned. The student must indicate the desired number of credits on the registration application.

# register by mail

Full payment is mandatory at time of registration.

### Core Requirement

Courses which may be applied toward completion of UMass core requirements are designated by a capital letter, in parentheses, following the course title.

### Registration Procedure

Once courses have been selected from the Course Descriptions section of this catalog, proceed to the Schedule of Courses and find the same course with its department, schedule line number, section/block, and number of credits. Include complete information on the registration application form. Detailed registration instructions appear on pages 12 and 13 of this catalog.

In the event that instructional costs cannot be met due to underenrollment, any course may be cancelled at the discretion of the Summer Session Director.

Inquiries concerning information contained in this catalog should be addressed to:

Summer Session Office  
Hills House North  
University of Massachusetts  
Amherst, MA 01002

## Course Descriptions

### Accounting

#### Introduction to Financial Accounting ACCTG 120

Introduction to principles underlying the preparation of financial statements.

#### Introduction to Managerial Accounting ACCTG 130

Continuation of Acctg 120 with major emphasis on the development and application of accounting data for planning and control.

#### Business Applications of Computers ACCTG 210

Basic business data processing methods with emphasis on general business problems and their application to the COBOL language. Prerequisites: ACCTG 110, 130, 110.

#### Financial Reporting I ACCTG 220

Intensive examination of fundamental concepts underlying financial reporting. Current literature dealing with effects of alternative methods upon measurement of periodic income. Prerequisite: ACCTG 130.

#### Financial Reporting II ACCTG 221

Continuation of Acctg 220 and intensive examination of current authoritative pronouncements on accounting principles. Prerequisite: ACCTG 220.

#### Cost Accounting ACCTG 230

Methods of cost analysis for job order, process, and standard cost systems, with

emphasis on cost control and interpretation. Prerequisite: ACCTG 130.

#### Managerial Cost Analysis ACCTG 235

Analysis of Cost-Volume-Profit relationships, cost behavior, budgeting and planning, responsibility accounting and control systems, behavioral aspects of budgets, divisional performance evaluation, inventory planning and accounting aspects of capital budgeting. Prerequisites: ACCTG 120, 130 and basic calculus.

#### Law IV: Business Law for Accountants ACCTG 263

Legal concepts and rules encountered in business transactions, with particular attention to subjects currently included in CPA examinations. Prerequisite: GB FIN 260 or permission of instructor.



**Federal Income Tax Procedure**  
ACCTG 370

Federal income tax laws and regulations as they affect individuals; preparation of tax returns. Prerequisite: ACCTG 120.

**Advanced Federal Tax Procedures**  
ACCTG 371

A continuation of Acctg 370 emphasizing corporations, partnerships, estates and trusts, gifts and estate taxes, tax planning and research. Prerequisite: ACCTG 370.

## Afro-American Studies

**Survey of African Art (C)**  
AFROAM 111

The literature on African art and an analysis of both the theoretical basis for its study and of the distinguishing characteristics of its major traditions. An historical survey of Black art from prehistoric times (5000 B.C.) to the European arrival. The neo-traditional art and the tourist trade.

**Afro-American History: Civil War to Present (C)** AFROAM 133

Major issues and actions during the Civil War and Reconstruction to the politics of accommodation in the early 20th century to the rise of Black Power.

**Afro-American Literature and Its Cultural Roots (C)** AFROAM 151

The relevant forms of Black cultural expression contributing to the shape and character of contemporary Black Culture: the literary application of these in traditional Black writers. In four parts: (1) West African cultural patterns and the Black past; (2) the transition — slavery, the culture of survival; (3) the culture through the literature; and (4) Black perceptions vs. white perceptions.

**Revolution in the Third World (D)**  
AFROAM 261

The nature of revolution in the Third World; emphasis on the struggles for national liberation and economic independence. The phenomena of colonialism, neo-colonialism, and military take-over. These topics approached using theory and case studies of revolutions in Algeria, Cuba, China, Viet Nam and Guinea-Bissau.

## Animal Sciences

**Introductory Animal Science**  
AN SCI 121

Modern animal and poultry science and the many scientific disciplines it encompasses. The poultry, dairy, meat, recreational and laboratory animal industries in terms of national and world economics and their role in serving mankind.

**Beginning Equitation I**  
AN SCI 150

An introductory course for those with no previous riding experience or who have not had formal instruction. Establishes correct balance seat position and use of the aids. Includes grooming, bridling and saddling, the walk trot (sitting and rising), diagonals and the start of canter work.

**Beginning Equitation II**  
AN SCI 151

Strengthens the position and security of the rider and introduces basic riding theory. Work without stirrups is done at a walk and trot and the canter is developed. Trotting poles are used to introduce the jump position at the walk and trot. Prerequisite: permission of instructor or completion of AN SCI 150.

**Intermediate Equitation I**  
AN SCI 152

Develops the balanced seat position at the walk, trot (sitting and rising), and canter, with and without stirrups. Jump position at the walk, trot and canter is practiced over cavaletti. Circles, figure eights, transitions and individual tests are utilized to develop control and precision. Prerequisites: permission of instructor and previous formal instruction.

**Intermediate Equitation II**  
AN SCI 153

Extension of AN SCI 152 with the riders secure in their position at the walk, trot (sitting and rising), canter and over cavaletti with and without stirrups. The horses used at this level are more difficult, being either younger, untrained horses, or the more sensitive, schooled horses. Concentrates on beginning dressage, cross country and stadium jumping. Prerequisites: permission of instructor and previous formal instruction.

**Special Problems in Training the Horse** AN SCI 156

Basic training techniques designed to acquaint the student with the methodology and philosophy of training horses from the ground. Proceeds progressively beginning with the training of young horses, and eventually leading up to the schooling necessary with older horses. Major topics include lungeing, long reining and backing the horse. Prerequisites: AN SCI 151 and permission of instructor.

**Special Problems in Teaching Equitation Instruction** AN SCI 157

Prepares students to be potential instructors. Includes theory; powers of instruction and practical application under supervision; riding school management. Prerequisites: AN SCI 153 or 154, permission of instructor, sophomore or junior status.

**Systemic Animal Physiology**  
AN SCI 220

A comparative study of the organ physiology of mammals and birds. Emphasis on those aspects most pertinent to animal science.

**Principles of Animal Nutrition**  
AN SCI 330

Scientific principles of nutrition in both ruminants and nonruminants.

**Horse Management**  
AN SCI 359

The nutrition, physiology, genetics, reproduction and health of the horse. Limited to Animal Science majors or by permission.

## Anthropology

**Introduction to Archaeology (D)**  
ANTH 102

The history, methods and theory of archaeology, with an outline of the main characteristics of the prehistoric record throughout the world.

**Introduction to Physical Anthropology**  
ANTH 103

Human evolution, human variation, racial classifications, racism, and modern theories of variation.

**Introduction to Cultural Anthropology (D)** ANTH 104

Social and cultural anthropology dealing with variations among societies in technology and economics, social and political organization, art, religion, and ideology.

**Biodemography: Connecticut Valley Research** ANTH 290M

Anthropology of the Connecticut Valley by actually participating in research. Reviews relevant literature on the history and geography of settlement in the Upper Valley. Field trips to historical sites in the area and elsewhere in Massachusetts.

**Religion and Ritual (D)**  
ANTH 340/640

Myths, rituals and religious beliefs of cultures in Africa, Asia, South America, Australia and the Ancient World. Prerequisite: ANTH 104 or permission of instructor.

**Summer Field School in Archaeology**  
ANTH 377/677

Practical experience and training in archaeology. Both prehistoric and colonial sites are excavated, and instruction is given in archaeological methods and techniques. Prerequisites: ANTH 102 or equivalent, and permission of instructor.

## Art

**Basic Drawing (C)**  
ART 100

Drawing in black and white, applying pencil, crayon, charcoal techniques to representation in line and tone, emphasizing sound observation and effective presentation.

**Basic Design I (C)**  
ART 120

Two-dimensional design concepts arising out of work with specific problems in a variety of media.

**Interior Design I**  
ART 210

Introduction to graphics, interior layouts, normative and descriptive elevations, 2- and 3-point perspective drawing, architectural measurement and theory of proportion.



## 22 Courses

### Painting I (C)

ART 220/520

Easel painting in oil and related media, based on elementary understanding of physical properties of medium, and encouraging individual directions within limitation of sound composition. Prerequisites: ART 100, 120.

### Painting III

ART 224/524

Continuation of Art 220. Prerequisite: ART 220.

### Advanced Drawing

ART 230

Investigation and development of various techniques and media with special emphasis on figure drawing. Prerequisites: ART 100, 102.

### Printmaking: Relief I (C)

ART 240

Basic study of material, technique, and aesthetic considerations peculiar to relief. Students print their own work. Prerequisites: ART 100, 120 or permission of instructor.

### Modern Art, 1880-Present (C)

ART 287

Major artists and developments from Post-Impressionism to the present.

### American Art (C)

ART 295

The earliest colonial art, the impact of later European influences, regional art of the 19th and 20th centuries, and contemporary developments.

### Interior Design III

ART 330/630

Planning, design, analysis and programming of interior spaces both residential and public. Interior materials, uses, applications, specifications and schedules. Prerequisites: ART 210 and 211 or equivalent.

## Astronomy

### Exploring the Universe (E)

ASTRON 100

Not open to Physical Science or Engineering majors. The earth, its structure and age, the moon, the sun, other planets and the origin of the solar system. Stars and galaxies, their birth and death. The universe, its structure and evolution. Supplemented by occasional hours of evening observation.

## Biochemistry

### Elementary Biochemistry (E)

BIOCHM 220/520

Intended for all students who need an extensive one semester survey of general biochemistry as a professional background for their major. The course considers the structure and metabolism of the common molecules of living organisms. Prerequisite: one semester of organic chemistry.

### Elementary Biochemistry Lab

BIOCHM 221/521

Laboratory for BIOCHM 220/520. Prerequisite: BIOCHM 220/520 previously or concurrently.

## Botany

### Plants and Environment (E)

BOTANY 121

The interrelationships between plants and their environment, emphasizing the impact of man's influence and control on the economy of natural biological areas. Designed for non-science majors. Not open to science majors without permission of major department.

### Genetics and Evolution (E)

BOTANY 175

Survey of the cell and those fundamental genetic principles which are the basis of evolution. Origin and history of organic evolution. Mechanisms of evolution. Intended for non-science majors.

## Business

## Administration

### Introduction to Computers for Business

BA 110

The BASIC and FORTRAN computer programming languages with emphasis on the use of the computer for business data processing and problem solving.

### Business Policy and Strategy

BA 371

An integrative case course requiring application of the students' skills, knowledge,

and understanding to the identification and possible solution of practical problems encountered by general managers who are responsible at various organizational levels for formulating strategies and their successful implementation.

## Chemical Engineering

### Fundamentals

CH E 125

Nature and scope of chemical engineering through study of selected chemical processes and of material and energy balances. Prerequisite: CHEM 112 or 114.

### Chemical Engineering Thermodynamics

CH E 126

The fundamental principles of thermodynamics. An in-depth discussion of the First and Second laws; study of properties of single-component systems, thermodynamic cycles, phase and chemical equilibria. Solution methods for complex energy and material balance problems are introduced. Prerequisites: CHEM 160, MATH 165, CH E 125.

## Chemistry

### General Chemistry (E)

CHEM 110

The fundamental chemical laws and theories. Meets minimum prerequisite requirements of CHEM 160 but not CHEM 127.

### General Chemistry (E)

CHEM 111, 112

The fundamental chemical laws and theories. Provides a sound scientific training for engineers and other students planning to take advanced courses in chemistry.

Student artists will present a new exhibit each week throughout the summer. Attendance at all displays is free. Students should check the summer paper for specific dates.

Joan Zalinsky, Ceramic Sculpture  
Steve Janis, Recent paintings on the subject of outer space  
Bill Tata, Recent works in minimal sculpture  
Bruce Pamerini, Color Field paintings  
Group Photography Show, Local photographers  
Beni Casselle, "A Black Man and His Art—the beauty and the bitterness of the Afrikan experience in Amerika"  
Charles Ahearn, NYC based film maker; five 16mm films

Faculty Show, Works of several UMass faculty  
Bernard Rosenquit, Show on women including gouache paintings, etchings, monotypes and woodcuts  
Dennis Quill and Russell Sumgrub, Collaborative pieces of sculpture  
Joe Kos, "Entertain Yourself Here"—an audio sculpture  
Summer School Show, Works of UMass summer school students

art shows:  
summer 1976

**Organic Chemistry (E)**

**CHEM 160**

For students whose major department does not require a year course in organic chemistry. Concurrent enrollment in CHEM 162 required. Prerequisite: CHEM 110 or 112.

**Organic Chemistry Lab**

**CHEM 162**

A laboratory survey of the chemistry of the major functional groups. Concurrent enrollment in CHEM 160 required.

**Organic Chemistry for Non-Majors (E)**

**CHEM 261/561**

The first course of a two-semester sequence (261/561, 262/562) which covers a survey of the principal classes of organic compounds and their reactions, with emphasis on the relation between structure and reactivity. Concurrent enrollment in CHEM 263/563 is required. Prerequisite: CHEM 112 or 114.

**Organic Chemistry for Non-Majors (E)**

**CHEM 262/562**

Continuation of CHEM 261/561. Concurrent enrollment in CHEM 264/564 is required. Prerequisite: CHEM 261/561.

**Organic Lab for Non-Majors**

**CHEM 263/563**

The experimental techniques of organic chemistry. Concurrent enrollment in CHEM 261/561 required.

**Organic Lab for Non-Majors**

**CHEM 264/564**

Continuation of CHEM 263/563. Concurrent enrollment in CHEM 262/562 is required. Prerequisite: CHEM 263/563.

## Chinese

**Intensive Intermediate Chinese**

**CHINSE 280**

Training in the proficiency of spoken Mandarin. Explanations of and intensive drills in advanced grammatical structures. Increases knowledge of both orthodox and simplified characters up to 2000 level. Introduction of modern literary style and exercises in short essays and composition. Prerequisite: CHINSE 146 or one year of intensive Chinese.

## Communication Disorders

**Clinical Practice**

**COMDIS 588, 588A, 588B**

Supervised experience in therapy with individuals having articulatory type disorders. May be repeated once. Prerequisites: COMSTU 181 and 182.

## Communication Studies

**The Process of Communication**

**COMSTU 170**

Process and functions of communication in the two-person, small-group, and public contexts. Topics include outcomes of communication, development of a model of interpersonal communication, learning theory, person perception, interpersonal attraction, language and nonverbal messages. Emphasis on understanding the process of communication and increasing competence as a communicator. Class projects and exercises.

**Introduction to Media Production**

**COMSTU 190A**

Processes involved in the production of radio programs, television programs and films. Evolution of the production process, analysis of current procedures, discussion of future trends. Limited production experiences in all media.

**Modes of Film Communication**

**COMSTU 190B**

Various styles and functions in film communication and artistic expression in narrative and non-narrative forms. Focuses on film form and function, and on film as record, translation, original storytelling, social observation, persuasion and self-expression.

**Interpersonal Communication (C)**

**COMSTU 210**

Nature and effects of person-to-person speech communication. Emphasis on the behaviors of everyday verbal and non-verbal communication that produce effects on ourselves, others, society and future communication. The relationship of interpersonal to public communication.

**History and Development of the Motion Picture COMSTU 225**

Evolution of the motion picture as an international art form and social force. Analysis of form, technique and impact of film. Selected screening of representative film styles and content.

**Organizational Communication**

**COMSTU 290B**

Communication in organizational settings, including service groups, clubs, families and residential groups, religious organizations, educational institutions, and business organizations. Focus is on interpersonal and small group communication as they reflect and influence organizational philosophies, goals, roles and decision-making.

**Pro Seminar in Mass Communications**

**COMSTU 391C**

Analysis and discussion of major problems in the field of mass communications. Prerequisites: written permission of the instructor, senior standing, 18 hours in Mass Communication courses.

**Seminar in Mass Communications**

**COMSTU 707C**

Focus is on "Mass Communications and the Classroom." Evaluation of the nature,

trends, and effects of television and other mass media in relation to the educational process. Experimentation and exposure to practical aspects of the media and their use in education. Emphasis on student needs and interests.

**Directing the Forensic Program**

**COMSTU 715**

Problems related to forensic programs: coaching individual and group activities, judging, tournament administration, and administration of the entire forensics program. Prerequisite: permission of the instructor.

## Comparative Literature

**Introduction to Comparative Literature:**

**In Praise of Folly (C) COMLIT 101A**

The spirit of laughter in literature; whether lover or scoundrel, the comic hero is seen as a "wise fool" upholding the basic human values of mirth and pleasure in a society disrupted by its own seriousness. Laughter as social protest. Readings selected from: Aristophanes, *The Clouds*; Chaucer, *Canterbury Tales*; Cervantes, *Don Quixote*; Shakespeare, *Henry the Fourth*; Voltaire, *Candide*; Carroll, *Alice in Wonderland*; plays by Slawomir Mrozek. Requirements: three 5-page papers and work with the instructor on revision when necessary. Regular participation in class.

**Introduction to Comparative Literature:**

**Literature as Social Commentary (C)**

**COMLIT 101B**

The writer as moral legislator for his society. Heroic code of medieval England and certain ecclesiastical codes of conduct; recent authors writing in social climates they feel to be intolerable. Readings: *Beowulf*; selected short writings of St. Benedict; Leo Tolstoy; Jonathan Swift; Dickens, *Oliver Twist*; Sinclair, *The Jungle*; Camus, *The Plague*; Solzhenitsyn, *Cancer Ward*. Requirements: two or three 5-page papers; class participation.

## Computer and Information Science

**Introduction to Problem Solving Using the Computer COINS 122/422 (E)**

Problem solving and FORTRAN programming for students from all disciplines. Concepts associated with problem solving valid for many types of problems. Use of FORTRAN on the UMASS time-sharing system. Laboratory included.

**Assembly Language Programming**

**COINS 201/501**

Basic ideas of computer hardware and principles of computer systems organization: input/output equipment, machine organization, logical design, elementary data structures, and assembly language programming. Lab involves hands-on experience with pro-



## 24 Courses

grams, loaders, and assemblers. Prerequisite: COINS 122 or programming experience.

### Computational Modelling

#### COINS 350/650

An introduction to probabilistic techniques such as Markov process, random walk and Monte Carlo techniques. Statistical techniques, distributions, and correlation coefficients. Brief introduction to simulation languages. Simple queues, n-person zero sum games. Selected topics generated by class interest. Prerequisite: COINS 202.

## Economics

### Introduction to Microeconomics (D)

#### ECON 103

Introductory analysis of resource allocation and income distribution through microeconomic theory. Specific problems illustrate the use of the theoretical precepts developed.

### Introduction to Macroeconomics (D)

#### ECON 104

An introduction to the economic theory used to explain the behavior of the American economy. Emphasis on the macroeconomic goals of full employment, price stability, economic growth and balance of payments equilibrium.

### The Economics of Insecurity and Poverty (D) ECON 131

Public and private programs to prevent or alleviate economic insecurity, including poverty, substandard incomes and economic contingencies.

### Intermediate Microeconomic Theory (D) ECON 203

Microeconomic analysis of consumers, firms, industries, and markets; rational decision-making under conditions of certainty; balancing forces in a free enterprise economy. Prerequisite: ECON 103.

### Intermediate Macroeconomic Theory (D) ECON 204

Formulation and empirical testing of static and dynamic theories of aggregate income, employment, and prices with reference to fluctuations, growth, and economic forecasting. Prerequisites: ECON 103 and 104.

## Education

### Foundations of Education

#### EDUC 251/551

Study of selected problems and issues in modern education such as educational aims, societal expectations of the schools, church-state relations, professionalism, academic freedom, curriculum and methodological emphasis, urban education, and educational innovation. Fulfills Foundations requirement for those students seeking teacher certification.

### Principles and Methods of Teaching Elementary Reading and Language Arts EDUC 261/561

Approaches to the teaching of reading and language arts in the open classroom. Presents, demonstrates and discusses innovations in methods and materials. Individualized Reading stressed. Learning centers and their use, diagnosis, techniques of teaching creative and functional language arts, and children's literature.

### Principles and Methods of Teaching Elementary Math EDUC 263/563

Introduction to the methods, materials and curriculum of mathematics education in the elementary school.

### Principles of School Guidance EDUC 277/577

The nature of guidance and its need in the schools with an overview of an adequate guidance service for a school system. Provides information and experience on how counseling services help people understand themselves, others, and how they can function effectively in society. Knowledge from educational psychology, philosophy, history and sociology examined and applied to guidance and personnel programs. Learning as an active process. Extensive reading and some field experiences.

### Methods in Teaching Secondary English EDUC 309/609

Workshop concentrates on current issues and problems in the teaching of English in high school, new curricular questions, the teaching of reading and writing skills, the use of writing labs, the place of literature and media in a course of study and the potential of small group instruction and personal growth activities in the English classroom. Open to graduates and undergraduates, pre- and in-service teachers; fulfills Methods requirement for secondary certification. Prerequisite: substantial English background.

### Principles of Educational and Psychological Testing EDUC 332/632

Basic principles of educational and psychological testing. Descriptive statistics, scores and norms, test reliability and validity, evaluating standardized tests, factors affecting test scores, criterion-referenced testing, and test development techniques.

### Introduction to Research for Non-Research Majors EDUC 333/633

Purposes for research, different kinds of research (historical, survey and experimental), and specific research methodology, drawn from statistics, experimental design, and measurement and evaluation. Applies techniques to practical problems.

### Introduction to Statistics and Computer Analysis EDUC 355/655

Introduces education and social sciences students to methods for reducing data to a few convenient descriptive terms and for drawing inferences concerning these terms from the data collected. Basic probability, frequency and probability distributions, measures of central tendency (mean, median, mode), measures of variability (range, standard deviation), tabulation and graphing, measures of association, linear regression, sampling distributions, hypothesis testing, confidence intervals, and analysis of qualitative data.

viation), tabulation and graphing, measures of association, linear regression, sampling distributions, hypothesis testing, confidence intervals, and analysis of qualitative data.

### Methodology and Materials in Teaching Occupational Education (Agriculture) EDUC 375/675

Modified seminar approach to classroom teaching of agriculture. Problem-solving approach to teaching, preparation of behavioral objectives, performance-based instruction, micro-teaching, and a review of new and innovative materials for teaching vocational agriculture. Offered primarily for teachers of vocational agriculture who need certification as stipulated by the Massachusetts State Plan for Vocational Education. *Note:* This course is to be offered at the University's Suburban Experiment Station, Waltham, Ma., on Wednesdays (June 2-July 7, 1976) from 9-12 a.m. and 1-4 p.m. Prerequisites: Adolescent or Educational Psychology; Principles and Practices of Occupational Education; or permission of instructor.

### Introduction to School Counseling Theory EDUC 390A

Explores major theories of counseling to orient and expand ways of thinking about the counseling process. Readings and demonstrations according to the experiences and interests of students.

### Reading Instruction EDUC 390B

Introduces reading instructional practices in school settings. Critical overview of current approaches, methods and materials, supported by an introduction to some basic understandings about the reading process and the acquisition of written language.

### Introduction to Reading Diagnosis EDUC 390C

Methods for evaluating reading performance. Uses and misuses of standardized tests; construction of teacher-made tests; and assessment of students' reading through the analysis of oral reading miscues.

### Photography in Education EDUC 390D, 390E

Introduces 35 mm photography. Brief history of photography and the history of photography in education. Extensive darkroom work; critical analysis of work. Continuous application of strategies for education and the place of photography in the classroom. Strictly in black and white photography in darkroom. Prerequisite: own 35 mm camera, permission of instructor.

### Counseling for Human Development EDUC 390F

Survey of current psychotherapies. Brief introduction to Freudian concepts and their development by later psychologists; concentration on current, particularly existential (humanistic) psychotherapies (e.g., Rogerian, Gestalt, TA, etc.). Attention to each student's counseling theory, and development of personal style of counseling. Political implications of existential psychologies. Prerequisite: some counseling experience preferred.



### Workshop in African Education

#### EDUC 390G/686G

Critical educational problems and issues in selected African countries. The role of education in its historical, political, economic and sociological contexts. Reviews existing teaching materials on Africa and develops new materials for use in the schools.

### Family Counseling

#### EDUC 390H

Working knowledge of family dynamics and the role of the student's family of origin in his/her personal development; awareness of one's role and function in a self-defined family system; current theories and techniques of family counseling. Prerequisite: interview with instructor.

### Effective Classroom Communication

#### EDUC 390I/686I

Principles and problems of classroom instruction and the exercise of educational leadership to improve instruction at the elementary, secondary, and higher education level. Experiences in curriculum development, appropriate teaching techniques, and development of learning materials. Provides opportunities for micro-teaching and activity-based projects.

### Extension and Adult Education for

#### Development EDUC 390J/686J

Role of extension and adult education in developing less developed economies, emphasizing rural communities of the Third World. Explores possibilities of improving international development efforts by using nonformal education as development tool.

### Sign Language and Fingerspelling

#### EDUC 390K

Basic signs and fingerspelling, technique of total communication and its inherent characteristics of mime, body language, and facial expression. Lectures and discussion concerning deafness and the ramifications of this handicap.

### Curriculum for Creating

#### EDUC 390L/686L

Recent developments in basic psychological and neuropsychological research concerning right and left cerebral hemispheric functioning in humans. Workshop on creative and curriculum-extending devices. Preliminary form of curriculum materials for the extension of normal human intellectual and creative capacities for elementary and high school age levels. Extends consciousness levels toward developing personal creativity in a transdisciplinary effort. Prerequisite: some teaching experience preferred.

### Family Psychodynamics

#### EDUC 390M

Individual psychological development within the context of the family, including family life cycle, "healthy," "neurotic," and "psychotic" families, double-bind theory of schizophrenia, family communication systems, and a brief introduction to family therapy models. Seminar format using didactic readings, films; case studies using data from our own families. Prerequisite: some counseling experience preferred.

### Teaching Reading as a Comprehension-Centered Activity EDUC 700A

Advanced workshop developing reading instructional strategies and resources, emphasizing strategies for individualizing reading instruction, for making reading a comprehension-centered activity, and for building on readers' language strengths. Theoretical view of the reading process as the basis for decision-making and instructional planning.

### Options in Public Education

#### EDUC 700B

For teachers at South High School in Worcester who are involved in the UMass/Worcester Teacher Corps Program. Literature of options in public education and application of readings to the development of learning options in the new Southwest High School in Worcester. Prerequisite: must be a teacher at South High School in Worcester, Ma.

### Workshop for Inservice Schemes

#### EDUC 700C

Workshop in response to inservice teachers and administrators who assume responsibility for staff development and inservice work. Seminar on exploring the literature and research related to staff development, designing staff development strategies, implementing the strategies in the field, and evaluating the growth which occurs. Teams document their processes. Prerequisite: permission of instructor, Dr. Mason Bunker, 224 School of Education, 545-1587.

### Seminar in Education: Issues in Curriculum and Instruction in the Secondary Schools EDUC 705

Selected issues, theory and present practice with emphasis on determiners of curriculum, methods of instruction, individualization of instruction, and the role of evaluation.

### Seminar in Mathematics Education

#### EDUC 710

Survey of recent developments in elementary mathematics education and their implications for exploring mathematics in the elementary school. Emphasizes active learning and the use of physical materials.

### Children's Literature

#### EDUC 782

Lectures, demonstrations, discussions, practicum and readings surveying the field. Investigates various content areas (comparative folklore, poetry, and non-fiction), approaches for classroom use, contemporary problems, and the needs of specific populations. Critical issues in recent children's fiction, including divorce, sex, treatment of minorities and females, death, old age and family interaction.

### Laboratory for Counseling Skills

#### EDUC 831

General nature of theory-construction, levels of explanation, relationships of philosophy, psychology and sociology, various methods of facilitating human growth and development. Intensive 40-hour workshop in helping skills as defined in the microcounseling paradigm.

Lecture-discussion, presentation of specific videotaped models of helping, and 50% small-group work in units of four with closed-circuit videotape units. Students demonstrate specific competence in helping in small-group meetings with instructor. Prerequisite: permission of instructor, Microcounseling recommended.

### Educational Sociology

#### EDUC 884

The American public schools examined as one of many social institutions in the American culture. Emphasis on population, pressure groups, and the social structure of the schools within the community.

### School Counseling Theory

#### EDUC 910

Several theories of counseling encourage students to develop a system of helping. Rogerian, Gestalt, transactional analysis, psychosynthesis, behavioral social learning, psychodynamic, re-evaluation co-counseling, existential, trait and factor. Video and film models of alternative approaches to helping. Prerequisites: EDUC 577; at least one hour of credit in EDUC 701.

### Group Activities in Counseling

#### EDUC 915

A guidance study of school groups. Group dynamics, discussion techniques, group counseling, sociometric methods, and other school group activities. Laboratory training experience focusing on personal and group development. T-group sessions focus on inter-personal interaction and group dynamics, and effectiveness in assuming functions necessary for building and maintaining a group. Outside reading, theory and skill session in class, and observation of other groups. Group dynamics theory and practice, with individual development. Prerequisite: application form, Room 368, Hills South.

## Electrical and Computer Engineering

### Circuit Theory

#### ECE 204

Concepts used in the analysis of electrical circuits and systems: Fourier transforms, amplitude and phase responses, elementary synthesis, introduction to non-linear and time-varying networks. Prerequisite: ECE 142

## English

### Society and Literature (C)

#### ENGL 131

Concentrates on writers and novels such as Brontë, *Wuthering Heights*; Lawrence, *Women in Love*; Gissing, *The Odd Woman*.



## 26 Courses

*cn; Woolf, Mrs. Dalloway; Hesse, Steppenwolf; Joyce, Portrait of the Artist, or Dubliners; Hemingway, The Sun Also Rises; Steinbeck, The Grapes of Wrath; Toomer, Cane; Fowles, The French Lieutenant's Woman.* Focuses on individual writers but seeks to create a sense of interactions between writers and the modern society. Several short to moderate length papers.

### Reading Fiction (C) ENGL 152

An introduction to themes and techniques of fiction through a reading of selected short stories and novels with emphasis on such matters as structure, style, point of view, and the like.

### The Modern Novel 1930-1960 (C) ENGL 262

Analysis of some twelve novels. A continuation of ENGL 261, but may be elected independently.

### 19th Century American Literature (C) ENGL 273

Significant productions in expository prose, poetry; the emergence of an American literature.

### Stylistics

#### ENGL 290S (also LING 290S)

Three part course: 1) brief overview of the aims and techniques of linguistics, leading to a consideration of transformational generative grammar as a hypothesis about natural language; 2) application of this theory of grammar to the study of syntactic literary style; 3) relation of theories of metrical analysis to modern theories of phonology. Term paper and one short in-class presentation on a poem or prose passage of interest. Substantial reading recommended.

### Creative Writing

#### ENGL 341

Intensive practice in writing prose fiction, poetry, and occasionally other forms, supplemented by discussion of ideas and techniques in contemporary literature.

### Individual British Authors: John Donne (C) ENGL 382

The beginnings of learning how to read poems and how to share readings with others. John Donne offers versatility and depth of experience as an exciting, lyric English poet dealing with the love experience and its relationship to God.

### Individual American Authors: Robert Frost (C) ENGL 384

Enlarges understanding of Frost as a poet, essayist, and thinker. Includes reading and discussion of poems and major essays in the light of Frost's other writings and his major critics' writings. One class report and assessment of a critic of Frost required, plus a few short papers, a substantial term paper, and a final exam.

### Shakespeare

#### ENGL 732

Close examination of Shakespearian plays representing the characteristics of his dramatic art.

### Seminar in American Literature: Teaching Contemporary American Fiction in High School ENGL 838

Includes a resolution of conflict in novels of Pynchon, Vonnegut, DeLillo, McGuane, McMurtry, Oates, Gaines, Didion, Hawkes, Barth, Barthelme, Gardner, and Brautigan—Americans, Black and White, men and women. For in-service secondary school teachers, MAT candidates, and approved undergraduates. Emphasizes teaching and interpretation, and an intensive weekend seminar format for peer dialogue. Meets Saturday and Sunday, June 5-6, 19-20, 26-27, 9 a.m.-12 noon, 1-3:30 p.m. Please contact the instructor before registration to obtain detailed syllabus.

## Entomology

### Insects and Man (E)

#### ENT 126

A survey of the field; structure, development, evolution, classification, biology, and natural control of insects. Formation of an insect collection.

## Environmental Design

### Land Form

#### ENVDES 353

The manipulation of land surfaces; graphic representation through topographical plans cross sections, profiles and models. Open only to students in the Design Studio Option.

## Environmental Sciences

### Case Studies of Environmental Problems ENVSCI 250

A problem approach to provide the necessary conceptual framework for analysis of environmental problems. Selected case studies used to investigate the parameters of specific disciplines in relationship to "causes" and "cures" of environmental problems, and identify interfaces among those disciplines for future research. For students in environmental sciences, environmental sciences education, as well as those others who are interested in environmental studies. Prerequisite: two semesters of college science.

## Food & Resource Economics

### Basic Biometry (E)

#### F&R EC 177

Introduction to applied statistical principles and techniques for biological data.

### Environmental Economics

#### F&R EC 226

Issues relating to environmental aspects of land and water use. Emphasis on the economic implications of alternative courses of action as they affect both public and private sectors. Prerequisites: ECON 100 and 103 or equivalent background.

### Introductory Econometrics

#### F&R EC 290A

Introduction to econometric estimation methods. Topics include: an introduction to least squares regression, regression theory, multiple linear regression, regression extensions, correlation, serial correlation and related problems, and simultaneous equations estimation. Theory and application receive roughly equal emphasis. Prerequisite: an introductory course in statistics or consent of instructor.

# Register by Mail

## Advance registration deadlines:

**May 19**

**Blocks C,D,F,J**

**June 11**

**Blocks G,L**

**June 30**

**Blocks E,H**

**July 23**

**Block I**

**Registration information begins on page 12.**

## Forestry

### The Elements of Forest Mensuration FOREST 225

The measurement of trees, stands, and forest products; practice in timber estimating and log scaling; collection and compilation of forest inventory data.

## French

### Intensive Review FRENCH 123

Four language skills in preparation for third semester French. Intensive, fast moving course which reviews all the work normally done in two semesters of college French or two years of high school French. Open library language lab available. Prerequisite: two years of high school French.

### Intermediate French FRENCH 130

Intensive study and review. Readings in modern French literature. Prerequisite: FRENCH 123 or 126, or equivalent.

### Conversation FRENCH 162

Practice in conversational French. Prerequisite: FRENCH 161.

### Graduate Reading Course FRENCH 470

Intensive course stressing reading skills for graduate students needing to fulfill language proficiency requirements. No credit.

## General Business and Finance

### Corporation Finance GB FIN 201

Corporate financial behavior; appraisal of factors affecting decision-making regarding sources and application of funds; introduction to capital budgeting and cost of capital problem. Prerequisite: ACCTG 125 or permission of instructor.

### Administrative Statistics GB FIN 250

Probability and statistical distributions applied to business management problems; application of Bayes' theorem to sampling for business decision-making under uncertainty.

### Introduction to Law GB FIN 260

The nature, functions and limits of law. Various theoretical approaches to law as an important institution in society. Selected problems of law, power and stratification and the relationship of law and values in society. Analysis of the administration of law through legislation, administrative agencies and courts.

## Geography

### Introduction to Human Geography (D) GEOG 155

The spatial attributes of human societies; population, cultural characteristics, settlement, and economic activity. Selected regional case studies.

## Geology

### Physical Geology (E) GEOL 101

The nature and origin of the landscape features of the earth and their underlying rocks and structures, including the work of rivers, waves and currents, wind, and glaciers; the role of earthquakes, volcanoes, and the processes of mountainbuilding.

## German

### Elementary German GERMAN 110

For the non-German major who has no previous training in German. Emphasis on understanding and reading. Sequence to be followed: GERMAN 110, 120, 130, 140.

### Intensive Elementary German GERMAN 126

For non-German majors. Intensive training in all language skills. Equivalent of 110, 120.

### Intensive Intermediate German (C) GERMAN 146

A thorough review for non-German majors of grammar, reading and discussion of literary texts; emphasis on the cultural background of German speaking countries. Equivalent of 130, 140. Prerequisite: GERMAN 120, 126, or advanced placement.

### Graduate Reading Course GERMAN 409

Preparation for the graduate school language requirement and/or acquisition of reading knowledge of German for research purposes. Grammar and structure of German, combined with daily translation assignments. Brief vocabulary quizzes and somewhat longer reading comprehension exams on a regular basis as a preparation for the Princeton GSFLT Test. No previous knowledge of German required. No credit.

## History

### History of Latin American Civilization (C) HIST 121

An introduction to the history of Latin America. First semester: from pre-conquest times to the close of the colonial era; second semester: the evolution of Latin America in the 19th and 20th centuries.

### The Development of American Civilization to 1876 (C) HIST 150

A survey of the American national growth.

### The Development of American Civilization 1876 On (C) HIST 151

A survey of the American national growth.

### New Approaches to American History (C) HIST 185

In 1919 eight members of the Chicago White Sox baseball team conspired with gamblers to lose the World Series. Why did they do it, and what were the mechanics and the consequences of their action? The course does not demand a knowledge of or interest in baseball; it does assume an interest in the general development of American society.

### The History of Russia II (C) HIST 215/515

A survey of Russian political, social, economic, and intellectual history. The impact of modernization on Russia in the 19th and 20th centuries.

### Medieval England (C) HIST 233/533

England from the 5th to the 15th century, with particular attention to the Anglo-Saxon period, the Norman Conquest, and the evolution of government to the accession of the Tudors.

### The South in American History (C) HIST 332/632

From early settlement to contemporary regional problems.

### Topics in United States Intellectual History HIST 738

Specific aspects of such general topics as the American adaptation of the European heritage, the growth of the concept of Americanism, the emergence of patrician leadership, the achievement of realistic democracy, the triumph of nationalism, the assertion of individualism in a corporate society, and the scientific-humanistic culture conflict.

## Honors

### Honors Tutorial of Case Studies of Environmental Problems HONORS E-10

Specific case study of a current environmental problem as selected by students. The case studies will be presented orally (in the honors tutorial) as well as in written form. The first four tutorials will consist of discussion of selected topics from assigned readings. The remaining five tutorials will consist of student presentations. (ENVSCI 250)

## Hotel, Restaurant & Travel Administration

### Food Preparation and Services HRTA 156

Basic principles of menu planning and the management of purchasing, food production, and service.



# 28 Courses

## Hotel Systems and Operations

### HRTA 310

Analysis and evaluation of hotel systems and operations. Emphasis on analytical techniques, systems, computer-assisted operations, and change-induced problems. Opportunity to participate in operations of Campus Center. Prerequisites: HRTA 102, 200, 211.

## Industrial Engineering

### Industrial Engineering Economics II IE 354

An introduction to economic problems faced by engineers, comparison of alternatives in engineering projects, use of discounted cash flow techniques, breakeven and minimum cost points, and economic selection and replacement of structures and machines; decisions made in the face of risk and uncertainty. Instruction wherever advantageous by the case method. Intended as a service course for all technically-oriented individuals.

## Italian

### Elementary Italian ITAL 110, 120

For students with no previous creditable training in Italian. Intensive practice in language skills.

## Latin

### Intensive Elementary Latin LATIN 110

An introduction to the elements of the Latin language. For students with no previous experience with Latin.

### Intensive Intermediate Latin (C) LATIN 140

Mastery of the basic structures of the Latin language and attainment of intermediate competence in reading Latin prose. Prerequisite: LATIN 110, 112, 115, or 125, or 2-3 years of Latin in high school.

## Legal Studies

### Seminar: The First Amendment LEGAL 391M

The First Amendment guarantees the freedom of speech, press, religion, assembly and petition for redress of grievances. Explores the basic meaning of the First Amendment and several areas in which its current vitality is open to question. Readings: T. Emerson, *Toward a General Theory of the First Amendment*, multilithed cases and materials.

### Seminar: The Fourth Amendment LEGAL 391N

The Fourth Amendment protects citizens from unreasonable searches and seizures and is as close as the constitution comes to guaranteeing a right to privacy. Examines the history of the amendment, and its relationship to the problem of crime in society, to the role of the police, to surveillance of citizens and to the computerization of files. Readings: multilithed cases and readings.

### Seminar: The Sixth Amendment LEGAL 391O

Examines the history of the amendment with particular emphasis on the significance of the jury within our legal and social system. Readings: multilithed cases and readings; Anthony Lewis, *Gideon's Trumpet*.

### Total Institutions LEGAL 391P

Examines the role of persons in society as a total institution. Studies the legal and social dimensions of the correctional system and considers its relationship to other institutions in our culture. Readings: multilithed cases and readings; Goffman, *Asylums*.

## Leisure Studies and Services

### Man and Leisure LS&S 101

Concepts of leisure, play and recreation and their societal implications. Examination of leisure opportunities and experience with emphasis on the delivery of leisure services. Field trips.



## Linguistics

### Introduction to Linguistic Theory (C) LING 201

The nature of language; an in-depth study of important aspects of the structure of the student's language, viewed from the standpoint of modern linguistic theory. Emphasis on syntactic problems; some attention to phonology, language acquisition, etc.

### Introduction to Psycholinguistics (C) LING 211

Its theoretical foundations, methodology, and experimental techniques. Emphasis on the acquisition of language, child language and linguistic universals, and learning and perceptual strategies. Prerequisite: LING 201.

### Stylistics

#### LING 290S (also ENGL 290S)

Three part course: 1) brief overview of the aims and techniques of linguistics, leading to a consideration of transformational generative grammar as an hypothesis about natural language; 2) application of this theory of grammar to the study of syntactic literary style; 3) relation of theories of metrical analysis to modern theories of phonology. Term paper and one short in-class presentation on a poem or prose passage of interest. Substantial reading recommended.

## Management

### Principles of Management MGT 201

Introduction to administrative processes and procedures of management.

### Personnel Management MGT 214

Principles and policies followed by management in recruitment, development, direction, and control of personnel.

### Managerial Behavior MGT 230

Principles of human behavior in organizations; understanding of one's self as a person and as a manager; development of interpersonal managerial skills. Prerequisite: MGT 201.

### Administrative Theory MGT 231

Principles of administration, modern organization theories, specialization, functionalization, coordination, planning and control, authority status, leadership, decision-making, communication, and power-structuring. Prerequisites: MGT 201, 230.

### Business and Its Environment MGT 265

A critical examination of the social, political, technological, and ethical issues confronting the contemporary manager and the modern corporation. Competing concepts of the role of business in society. Prerequisite: junior standing or permission of instructor.

## Marketing

### Fundamentals of Marketing MKTG 201

The role of marketing in our economic and social structure. The planning, distribution, pricing and promotion of goods and services to consumer and industrial markets viewed as internal activities of the firm, and as shaped by environmental forces.

## Buyer Behavior

### MKTG 210

Analysis of buyer motivation and buying behavior. Explanatory theories of consumer market behavior and models of the decision-making process for winning patronage. Prerequisite: MKTG 201 or permission of instructor.

## Marketing Management

### MKTG 216

An advanced understanding of the nature and problems of marketing management: the process of marketing management, the environments facing the marketing manager, and the tools available for environmental analysis and control of marketing activities. Prerequisite: MKTG 201 or permission of instructor.

## Marketing Communications

### MKTG 222

Development of effective marketing communication strategies based upon an understanding of the characteristics of audiences. Conceptual material from communications theory applied to advertising and other promotional problems. Prerequisite: MKTG 201 or permission of instructor.

# Mathematics

## Mathematics in the Modern World (E)

### MATH 100

A cultural presentation of some mathematical ideas to demonstrate both the scientific and the humanistic values. Open to Mathematics majors for non-major elective credit.

## Algebraic Review

### MATH 101

A rapid review of algebraic manipulations and definitions utilized in calculus. Topics include common subsets of the real numbers; sums, products, and quotients of polynomials; factoring, rational expressions; exponent and radicals; linear and quadratic equations; radical equations; linear and quadratic inequalities; equations and inequalities involving absolute values.

## Analytic Geometry with Elementary

### Functions MATH 102

An introduction to the function concept and analytic geometry. Topics include relations and functions; one-to-one functions and their inverses; linear, quadratic, and other polynomial functions; exponential and logarithmic functions; lines; conic sections. Prerequisite: MATH 101.

## Precalculus Trigonometry

### MATH 103

An introduction to trigonometry covering topics considered essential for standard calculus. Topics include definitions and graphs of cosine, sine, tangent, cotangent, secant, and cosecant; essential identities; introductory triangle trigonometry. Prerequisite: MATH 102.

## Elementary Techniques of Mathematics (E) MATH 110

A survey of several specific topics designed to acquaint the student with the general nature of mathematics. Topics may include logic and sets, mathematical systems, calculus, probability, statistics, linear programming, and game theory.

## Mathematics for Business I (E)

### MATH 120

Designed for School of Business Administration students. Linear and analytic mathematical methods and their applications to business. Linear systems of equations, matrices, vectors, Markov chains, linear programming, derivatives. Credit not given after MATH 112, 115, 116, 118, or 167.

## Mathematics for Business II (E)

### MATH 121

Integration, functions of several variables, and applications to business. Credit given for only one of the courses 117, 119, 121, 132, 136, 138. Prerequisites: MATH 116, 120, or equivalent.

## Calculus for the Life and Social Sciences I (E) MATH 127

Introduction to differential and integral calculus. Applications to the life and social sciences stressed. Credit given for only one of the courses 116, 118, 127, 131, 135, 137, 146. Prerequisite: high school algebra and plane geometry.

## Calculus With Precalculus I (E)

### MATH 131

Introduction to differential and integral calculus of functions of a single variable with requisite analytic geometry and trigonometry: analytic geometry of lines and conic sections, trigonometric functions, continuity, derivatives, extrema, curve sketching, the integral. Intended for students not prepared for MATH 135 but who need less preparation than MATH 101-103. Credit given for only one of the courses 116, 118, 127, 131, 135, 137, 146. Prerequisites: high school algebra and plane geometry.

## Calculus With Precalculus II (E)

### MATH 132

Continuation of Math 131. Integration techniques, limits, partial derivatives, integrals as limits, improper integrals, theorems of Cauchy and Taylor, infinite series and power series, smooth curves. Credit given for only one of the courses 117, 119, 128, 132, 136, 138. Prerequisite: MATH 131/135.

## Multivariable Calculus (E)

### MATH 165

Functions of several variables, partial derivatives, multiple integrals, theorems of Green, Stokes, and Gauss. Prerequisite: MATH 173/183 or MATH 132/136/138.

## Introduction to Linear Algebra (E)

### MATH 167

Vector spaces over the real field, linear independence, linear equations, bases and dimension, inner product spaces, linear transformations and matrices, determinants, eigenvalues, applications to geometry. Not for credit after MATH 212. Prerequisite: second semester calculus to be taken concurrently.

## Introduction to Modern Algebra I (E)

### MATH 211

Introduction to groups, rings, and fields. Prerequisite: MATH 167. MATH 200 may be helpful but not necessary.

## Advanced Calculus I (E)

### MATH 225

Elementary topology of the line and Euclidean  $n$ -space, continuous functions, Riemann integration, infinite series and power series. Not for credit after MATH 325. Prerequisites: MATH 165/166 or MATH 174/184 and MATH 167. MATH 200 may be very helpful but is not required.

# Mechanical and Aerospace Engineering

## Energy and Man (E)

### M&A E 101

Energy and its role in a technological society. The fundamental laws of energy and energy conversion. Secondary environmental effects of energy production and transmission. Energy resources and energy management. Not open to engineering majors.

## Mechanics I

### M&A E 144

A vector treatment of the equilibrium of particles and rigid bodies. Topics include: vector algebra, forces, moments, couples, equations of equilibrium, free-body diagrams, graphical techniques, constraints, structures and mechanisms, friction, centroids and moments of inertia, the method of virtual work. Prerequisites: MATH 136, PHYSICS 161.

## Thermodynamics

### M&A E 163

The laws of thermodynamics introduced and applied to various energy-transforming devices. Property relations. Emphasis on the science of thermodynamics, providing a background for further study in those areas that involve thermodynamic principles. Prerequisites: PHYSIC 162, MATH 165.

# Music

## Introduction to Music Appreciation (C)

### MUSIC 101

Open to all students not majoring in music. Previous musical training not required. Basic music materials, principles of design, and cultural significance of representative works from the ninth century to the present.

## Afro-American Music (C)

### MUSIC 108

Spirituals, blues, songs, jazz and classical music of Afro-Americans.

## Elementary Music Theory for Non-Majors (C) MUSIC 111A

Notation, ear-training, solmization, sight-reading, harmony, counterpoint, analysis by score and sound of music literature from all periods, orchestration, improvisation and original composition. Prerequisite: ability to read music.



## 30 Courses

### Elementary Music Theory (C)

#### MUSIC 112

Notation, ear-training, solmization, sight-reading, harmony, counterpoint, analysis by score and sound of music literature from all periods, orchestration, improvisation and original composition. Prerequisite: ability to read music.

### Piano Class

#### MUSIC 120

Piano proficiency. Required of all music majors. Not open to non-majors. By examination, or no more than 4 hours credit allowed.

### Individual Instruction: Applied Voice

#### MUSIC 123

Attention to development of performance skills and study of appropriate literature.

### University Chorus

#### MUSIC 162/762

Preparation and concert performance of oratorios and other large choral works.

### Contemporary Techniques

#### MUSIC 217

Examination of melody, rhythm, harmony, and form in 20th century music. Analysis, listening, and written assignments. Prerequisite: MUSIC 114.

### Music for Elementary Teachers

#### MUSIC 231/700G

Assumes little or no background. Improvisations, composition experiences, using non-traditional and environmental sound sources, vocal sound exploration, traditional and non-traditional instrumental techniques, electronic music, and functional notation systems. Applications of techniques and materials for use with children at various levels. For professional and prospective classroom teachers.

### History of Opera

#### MUSIC 603

History of opera from late 16th through the present century.

### Seminar in Music Education

#### MUSIC 700H

Comprehensive view of contemporary trends in music and related arts education. Specific critical areas identified and analyzed. Exploration of new materials and curriculum practices K-12. Student critiques.

### Music Literature 1750-1825

#### MUSIC 714

Representative compositions from each period. Analysis by score and sound of the various musical forms and media.

### Instrumental Music in the Public School

#### MUSIC 752

The teaching of instrumental music: organization and pedagogical problems. Evaluation of current methods, materials, and research.

### Advanced Choral Conducting

#### MUSIC 755

Score analysis, rehearsal techniques, and advanced conducting problems of choral ensembles.

## Nursing

### Principles and Skills Basic to Professional Nursing and the Health Care of People

#### NURSE 120

Self-paced course provides skills basic to the provision of nursing care. Taught in a multi-media laboratory setting with faculty supervision. Prerequisites: all lower division prerequisites to the nursing major must be fulfilled before or concurrently with this course; permission of instructor.

### Pathophysiology

#### NURSE 200

Introduces concepts of pathophysiology. Emphasizes formation of concepts of pathology rather than the particulars of system dysfunction or individual disease entities; emphasizes ways in which various pathological processes affect the human organism at cellular, tissue, organ, organ system and whole body levels. Prerequisites: upper division standing, permission of instructor.

### Community Health Focus in Nursing

#### NURSE 210

Health status of a community by means of systematic collection and analysis of data, and report of findings. Includes theories of health, community, systems, communication, the nurse's role in health care. Clinical practice at Cooley Dickinson Hospital in Northampton. Students are responsible for their own transportation to and from the clinical area. Prerequisites: upper division standing, permission of instructor. Course limited to 20.

### Human Development: The Life Cycle

#### NURSE 240

Firm foundation in human development throughout the life cycle with emphasis on biological, psychological and sociological aspects. Prerequisite: permission of instructor.

### The Nursing Process

#### NURSE 250

Orientation to the Nursing Process in clinical decision-making for the Registered Nurse. The Nursing Process as a foundation for professional practice and in terms of its historical origins, present implications and future potential. Prerequisites: upper division standing, Registered Nurse, permission of instructor.

### Currents in Nursing

#### NURSE 310

Selected historical and contemporary currents. Attempts to project future currents and implications. Prerequisites: senior standing, permission of instructor.

### Nursing in Rehabilitation

#### NURSE 320

The role of the nurse in diagnosing and meeting needs of nursing care in assisting individuals and families toward rehabilitation. Includes community resources and services related to rehabilitation in major health problems; assisting individuals and families to gain access to needed health and health related services; concepts and theories related to collaboration with other health care workers. Prerequisites:

senior standing in nursing, permission of instructor.

### Nursing Practicum

#### NURSE 321

Clinical learning experiences in the care of individuals and families experiencing major health problems and needs for nursing care related to rehabilitation. Problem-solving approach in assessing health status and planning, implementing and evaluating nursing care for assigned individuals and families within the Community Satellite Learning Centers. Prerequisites: senior standing in nursing, permission of instructor.

## Park Administration

### Philosophy of Parks, Recreation and Leisure

#### PK ADM 390C

Contrasting concepts of leisure and recreation in relation to evolving recreational trends and needs. Analysis of the contemporary role of recreation in society with emphasis on the implications of leisure-time utilization and necessary managerial responses. Development of individual recreation philosophies.

## Philosophy

### Introduction to Philosophy (C)

#### PHIL 105

Some of the most important general questions, ideas, theories, and methods of inquiry which have given direction to Western thought.

### Introduction to Ethics (C)

#### PHIL 110

Classical and contemporary theories concerning policy formation and the justification of personal decisions and ways of life.

### Introduction to Logic (E)

#### PHIL 125

The nature of critical thinking, including the functions of language, the structure of deductive arguments, and a glimpse at inductive methods.

### Philosophical Approaches to Science (E)

#### PHIL 240

An introduction to the results of philosophical analysis of scientific practice, and the bearing of these results on a general description of scientific methodology.

### Existential Philosophies (C)

#### PHIL 264

Examination by a study of selected original texts of the main problems peculiar to this movement as a whole and to its main exponents individually. Prerequisite: one semester course in philosophy other than 125.

## Physical Education

### PE 100: Senior Lifesaving

#### PE G08

American Red Cross advanced lifesaving and cardiopulmonary resuscitation for double certification.



## PE 100: Water Safety Instructor

PE G09

Water Safety Instructor course.

## PE 100: Jogging and Conditioning

PE G11

Practical application of conditioning.

## Tennis II

PE G66

Tennis instruction.

## PE 100: Tennis I and Badminton

PE G67

Introduction to the basic skills of the game leading to a practical application in singles and doubles games.



## Professional Preparation in Physical Education

### Aquatics

PEP 151

Emphasis on skill acquisition at the intermediate level and focus on teaching and coaching techniques for aquatic activities.

### Tennis and Badminton

PEP 163

Emphasis on skill acquisition and teaching techniques of Tennis and Badminton.

### Outdoor Education

PEP 190H

Practical application in outdoor education experiences.

### Behavioral Analysis in P.E.

PEP 390D/700D

Practical applications of the principles of behavior modification for the teaching of physical education and the coaching of sport.

## Physics

### Introductory Physics I, II (E)

PHYSIC 141, 142

Mechanics, sound, heat; electricity, magnetism, light and modern physics, using trigonometry and algebra, but not calculus.

Intended for pre-medical, pre-dental, pre-veterinary, and some science major students. Prerequisites: MATH 130 previously or concurrently for PHYSIC 141; PHYSIC 141 for PHYSIC 142.

## Plant and Soil Sciences

### Organic Farming and Gardening (E)

PLSOIL 120

Basic principles of plant nutrition and culture, soil fertility and management by organic methods, biological and natural control of insect pests, weeds and plant diseases, variety selection, and alternative chemical methods.

## Plant Pathology

### Plant Diseases and Their Control

PLPATH 100

Occurrence and importance of plant diseases in the production of plants for food, clothing, shelter and beauty. Infectious agents and environmental factors that cause diseases of plants in the home and garden and principles of their control.

## Political Science

### American Politics (D)

POLSCI 101

Introduction to constitutional principles and public policy making in American national government. Democratic theory, major national political institutions, electoral behavior, and selected public policy questions.

### Comparative Politics (D)

POLSCI 131

Introduction to political structures, processes and comparative national development in parliamentary, one-party, and other political systems. The relationship of cultural values to institutions; emphasis on such forces of change as democracy, industrialization, and revolution.

### Political Misbehavior

POLSCI 190C

Compares misbehaviors in politics—corruption, graft, extortion, bribery. Includes the differing cultural definitions of corruption, misbehavior in the United States compared to that in other countries, and corruption in the United States over time. Concludes with a study of Watergate, placing it in historical and comparative focus.

### Public Administration (D)

POLSCI 223

Organization of bureaucracy, bureaucratic life, constitutional position and political role of governmental bureaucracy.

### Political Theory and Public Policy (D)

POLSCI 226/526

Evaluation of social policy in the United States. Emphasis on normative issues

raised in controversies over selected cases of social and economic policy in the light of the main traditions of Western political thought and of recent work on the logical and ethical aspects of social choice.

### Constitutional Law (D)

POLSCI 260

Study of the United States Supreme Court and leading cases interpreting the United States Constitution.

### American Public Policy

POLSCI 326A/726A

Selected aspects of the politics and administration of American environmental policy, including the politics of environmental decision-making and non-decisions. Intrinsic limitations of the American political economy in meeting environmental needs, and the interaction of economics and politics. Prerequisites: introductory course in political science recommended. Natural science as well as social science majors are encouraged to enroll.

### Government and Politics of the

Soviet Union (D) POLSCI 336/636

Survey of Soviet political life and assessment of the meaning and durability of its processes and institutions. The Communist Party and its membership and operation.

## Portuguese

### Elementary Portuguese

PORT 110, 120

For students with no previous creditable training in Portuguese. Intensive practice in the language skills.

### Intermediate Portuguese

PORT 130, 140

For students with one year of college Portuguese or equivalent. Training in the language skills; emphasis on speaking and understanding; readings in cultural and literary texts.

## Psychology

### Elementary Psychology (D)

PSYCH 101A, 101B

An introduction to the basic approaches and concepts of modern psychology. Examples from the areas of perception, conditioning, cognitive processes, social behavior, tests and measurements, and personality.

### Psychology as a Natural Science

PSYCH 120

Introduction to the natural science side of Psychology. Includes discussion of learning, cognition, neural bases of behavior, sensation, perception. Discusses broader issues of the science of psychology and introduces concepts of statistics.

### Psychology as a Social Science

PSYCH 130

Introduces topics in psychology related to the social science aspects of the subject. Includes material on developmental processes, child psychology, personality, social psychology, behavior pathology.

## 32 Courses

### Methods of Inquiry in Psychology PSYCH 140

Introduction to the way questions about behavior are formulated and then tested through laboratory experiments, field research methods, naturalistic observation techniques. Prerequisite: college level introductory psychology course.

### Statistics in Psychology PSYCH 145

Introduction to statistical principles and techniques as applied to psychological data.

### Learning and Thinking (D) PSYCH 220/520

A general survey of animal and human learning and performance. Topics include: factors affecting acquisition, generalization, discrimination, extinction, and transfer in animals and humans; memory; and higher cognitive processes in humans. Prerequisite: PSYCH 101.

### Motivation (D) PSYCH 230/530

Introduction to theories and research on the nature and determinants of motivation. Topics include instinct, behavior energization concepts, biological and acquired bases of emotions and motives, frustration, conflict and stress. Prerequisite: PSYCH 101.

### Child Behavior and Development (D) PSYCH 260

Psychological development of the child, including theories, methods, and data of child behavior studies. Prerequisite: PSYCH 101.

### Adolescent Psychology (D) PSYCH 263A/563A

The development and emotional, social and intellectual adjustment of the individual during adolescence. Prerequisite: PSYCH 101.

### Psychology of Exceptional Children (D) PSYCH 265

Emphasis on the etiology, diagnosis, characteristics, education, and prognosis of deviations in mental, physical, and socio-emotional development. Prerequisite: PSYCH 101, 262, or permission of instructor.

### Personality (D) PSYCH 270

Introduction to the scientific study of personality. Personality development, structure and dynamics from major theoretical orientations. Prerequisite: PSYCH 101.

### Social Psychology (D) PSYCH 280

Introduction to the principles and study of social behavior. The psychological factors involved in attitude formation and change, communication and persuasion, and small group processes. Prerequisite: PSYCH 101.

### Educational Psychology (D) PSYCH 301A, 301B

Psychological facts and principles of development, learning, and measurement as applied to educational situations. Prerequisite: PSYCH 101.

### Abnormal Psychology (D) PSYCH 325

Etiology, symptoms and therapy of behavior abnormalities including neuroses, psychoses, epilepsies, speech disorders, and mental deficiency. Prerequisite: PSYCH 101.

### Theories and Practice in Counseling PSYCH 365

Theories, techniques and tests necessary in counseling and guidance. Practice in organization and evaluating relevant data in the analysis of illustrative cases. Prerequisite: PSYCH 270, or 311, or permission of instructor.

### Practicum PSYCH 871

Practice in the application of psychological techniques to clinical settings and counseling; and practice in teaching in any area of psychology.

## Public Health

### School Health PUB HL 304/604

The principle concepts, methods, and dynamics of the organization of a school health program at the elementary and secondary level. Stress on planning and teaching in problem areas, (i.e., sex education, mental health and drugs). Prerequisite: junior or senior standing or permission of instructor.

### Public Health Statistics PUB HL 340/640

Principles of statistics applied to the evaluation of public health practices. Prerequisite: permission of instructor.

### Field Training PUB HL 382

A summer field training program with an official health agency, approved by the department. Must be under faculty supervision.

### Health Science Data: Statistical Methods for Environmental and Health Sciences PUB HL 700N

Course intended for Public Health, Environmental Sciences, and Statistics students interested in applications of statistical methods in environmental and health problems, such as air pollution, and laboratory experiments related to health problems.

### Field Training (Internship) PUB HL 782

For majors. Opportunity for supervised field observation and professional experience in selected public health agencies. Assignment in either associate function or internship.

## Regional Planning

### Philosophy of Parks, Recreation and Leisure REG PL 700M

Contrasting concepts of leisure and recreation in relation to evolving recreational trends and needs. Analysis of the contemporary role of recreation in society with emphasis on the implications of leisure-time utilization and necessary managerial responses. Development of individual recreation philosophies.

## Rhetoric

### Rhetoric of Language and Writing: Integrated Communication Skills I (B) RHET 100C

Integrated activities related to reading, writing, speaking and listening. The first half of a two semester sequence (RHET 100C followed by RHET 110C) but it may also be taken in conjunction with other rhetoric courses. Emphasizes meaningful selection of purpose, organization, supporting materials, tone and attitude for effective communication in today's business and social life. Assignments include written essays and speeches.

Rhetoric of Language and Writing: Elements of Writing (B) RHET 100G  
Basic language behavior with small classes and more writing assignments than, for example, RHET 100F. Emphasizes writing, editing, and rewriting to attain clarity in the use of words, syntax, and organization. Subject matter is interdisciplinary. Note: This is not a remedial writing course.

### Rhetoric of Language and Writing: Communicating about Poverty and Welfare Issues (B) RHET 100S

Skills necessary for clear and coherent written and oral communication. Focuses on issues in the social sciences, such as poverty, welfare, and related problems of social change. Emphasizes the meaningful selection of purpose, organization and supporting materials for effective communication in today's business and social life; mechanics of writing. Approximately 8 writing and speaking assignments. Offered in conjunction with Everywoman's Center. Please inquire further at Everywoman's Center or the Rhetoric Office.

### English as a Second Language: Elementary RHET 105A

Basic course in English structure, vocabulary and aural comprehension for students with limited knowledge and experience in English. Focuses on sentence structure and patterns as building-blocks for effective oral and written communication. Weekly quizzes, mid-semester and final exams, oral testing and demonstrated progress are main criteria. Class attendance and participation required. Prerequisite: permission of instructor.

### English as a Second Language: Intermediate RHET 105B

Continuation of 105A for students who have a knowledge of basic English structure and vocabulary, and who have developed effective aural ability and fluency of expression. Basic concepts of description, explanation, argumentation, narrative, and logical reasoning and organization. Final evaluation based upon tests, quizzes and demonstrated competence in aural comprehension, and informal oral and written expression. Prerequisite: successful completion of RHET 105A, or permission of instructor.



## English as a Second Language: Advanced RHET 105C

For ESL students whose aural comprehension, fluency and competence with English sentence structure are well developed. Focuses on reading, writing, discussion and oral presentation skills, provides student with the concepts for regular Rhetoric courses. Final evaluation based upon a mid-term and final exam, competence in written and oral expression as demonstrated in papers and discussions and the students' ability to reason and organize thought and materials in English. Class attendance and participation are required at all times. Prerequisite: successful completion of RHET 105B, or permission of instructor.

## Russian

### Elementary Russian RUSS 110, 120

Grammar, exercises in composition and conversation, selected readings. No previous language training required.

## School of Business Administration

### Business Applications of Computers S BA 510

Basic business data processing methods with emphasis on general business problems and their application of the COBOL language. Prerequisites: ACCTG 120, 130 and BA 110.

### Introduction to Accounting S BA 611

Principles underlying preparation of financial statements and the development and application of accounting data for planning and control.

### Marketing Environment S BA 622

Dimensions of change in social, economic, and political factors, related to efforts surrounding establishment and attainment of marketing policy and corporate objectives.

### Managerial Economics S BA 650

Application of the analysis of economics to problem solving at the level of the firm, of a government, of an economy, etc. Application of economic analysis to scarcity problems.

### Advanced Federal Tax Procedures S BA 671

A continuation of ACCTG 370 emphasizing corporations, partnerships, estates and trusts, gifts and estate taxes, tax planning and research. Prerequisite: ACCTG 370.

### Accounting Systems S BA 702

Accounting systems and their relationship to other business information systems.

### Financial Management S BA 706

Internal financial problems of firms; capital budgeting, cost of capital dividend policy, rate of return, and the financial aspects of growth. Readings and cases.

### Marketing Management S BA 722

Marketing concepts of planning, organization, control, and decision-making from the viewpoint of the business executive. Stress on tools available for analysis and control of marketing activities. Prerequisites: S BA 406, 411, 422, 440, 456, and 457, or equivalents.

### Business Policy S BA 752

Capstone course requiring application of knowledge, theories and techniques derived from previous courses, using integrative cases and empirical observations to formulate improved policies and plans.

### Quantitative Methods III S BA 756

Application of general methods to a wide variety of data analysis situations that occur in business and service organizations. The major tools are based upon linear statistical models and include: regression analysis, analysis of variance and the design and analysis of experiments, coupled with the use of the computer. Prerequisites: S BA 656 and 657 or equivalent.

## Sociology

### Social Problems SOCIO 103

Changes arising from culture contact, social reform, and technical innovations. Planned and unplanned change, particularly with respect to underdeveloped countries.

### Self, Society and Interrelationships (D) SOCIO 105

An introduction to basic concepts, perspectives, and data in sociology via the approach of social psychology. Focuses on the relationship between the individual, the group, and society. Topics discussed include socialization, social roles, social interaction, dynamics of small groups, the self, attitudes, and language and communication.

### Contemporary American Society (D) SOCIO 107

A "first course" in sociology, with special emphasis on contemporary American society. Current theories of how modern industrial societies are organized, and application to the American system.

### Theories and Perspectives (D) SOCIO 201

Required of all majors in the department, usually in the sophomore year. Examines the most important varieties of contemporary sociological thought, focusing upon the differing perspectives on, and assumptions about human society which underlie

contemporary sociological theories. Includes functional theory, conflict theory and symbolic interaction theories. Prerequisite: at least one other sociology course, preferably at the 100 level.

### Urban Sociology (D) SOCIO 251

A comparative analysis of cities and of urbanization with reference to demographic characteristics of urban populations, urban ecology, and urban social structure.

### Sociology of Religion (D) SOCIO 255

The relationship of religious beliefs and institutions to cultures and societies.

### Race Relations (D) SOCIO 256

The social, economic and political aspects of racial and ethnic problems in the United States; briefer consideration of similar problems in Africa and Asia.

### The Family (D) SOCIO 257

The development of the customs of courtship and marriage and the contemporary family. The basic causes of changes and trends of the family.

### Criminology (D) SOCIO 278

The nature of crimes and the factors underlying criminal behavior. The machinery of justice; the law, courts, police systems, and correctional institutions.

## Spanish

### Elementary Spanish SPAN 110

For students with no previous creditable training in Spanish. Intensive practice in language skills. To fulfill the language requirement, upon completion of the course most students are required to continue by taking SPAN 120, 130, 140.

### Intermediate Spanish SPAN 130

For upperclassmen who have completed SPAN 110-120, and freshmen and transfer students found qualified by placement examination. Training in language skill, with emphasis on speaking and understanding; readings in cultural and literary texts. Students completing SPAN 140 fulfill the language requirement.

### Spanish for Native Speakers SPAN 145

Review of Spanish grammar. Readings and composition. Open only to native speakers of Spanish.

Teaching English as a Second Language to Spanish Speakers SPAN 390H/700E  
Application of linguistic principles to the teaching of English for Spanish speakers.

### Hispanic Civilization: Spanish America SPAN 390J/700J

Culture of continental Spanish America.



## Sport Studies

### Psychology of Sport and Physical Activity SPORST 201

Variables of skilled performance; behavioral patterns and interactions in games, sports, and dance activities; evaluation of skilled performance. Prerequisite: PSYCH 101.

### History of School and College Sport SPORST 366/666

Developments in sport at educational institutions from the age of the unorganized plan to the present. Prerequisite: SPORST 561 or 662.

## Statistics

### Elementary Statistics (E) STATIS 121

Selected topics in elementary probability and statistics: discrete models for chance experiments, conditional probabilities; "odds" and betting schemes, combinatorics, averages and standard deviation, random sampling, binomial and normal distributions, regression, statistical inference, chi square test. Students who intend to use statistics as a research tool, but who do not have a calculus background, should elect STATIS 231, 232. Students with calculus background should elect STATIS 315, 316

### Statistics for Business STATIS 140

Random experiments and probability models; independence; conditional probability; sampling; random variables; data representations; special distributions, deduction and inference.

## Theater

### Introduction to Theater (C) THEATR 100

Introduction to the art of the theater: its history, form, function, influences, and place in society.

## Women's Studies

**Lives in Tension: Ida Wells, Emma Goldman, and Agnes Smedley** WOST 190Q  
Using the autobiographical writings of Ida Wells, Emma Goldman and Agnes Smedley, explores their reasons for becoming political activists. Uses the political writings of these women to explore the exact nature of tension, and when it arises. Considers an analysis of women's oppression and the more general analysis of a people's oppression.

### Women in Literature WOST 190Z

Close reading and examination of 19th and 20th century English and American novels, primarily by women. Develops analytic skills and discussion of a feminist aesthetic. Possible readings include Lee Edwards and Arlyn Diamond, *American Voices, American Women*; Chopin, *The Awakening*; G. Eliot, *Middlemarch*; C. Brontë, *Jane Eyre*; E. Brontë, *Wuthering Heights*; Kelley, *Weeds*; Smedley, *Daughter of Earth*; Woolf, *To the Lighthouse*; Atwood, *Surfacing*; Angelou, *I Know Why the Caged Bird Sings*. (Current material to be added as it appears in paperback.) Class will determine the readings selected.

**The Invisible Woman: A Critical Analysis of Traditional Sociology** WOST 290C  
Examines current subject division in modern sociology and the position of women as subjects in each of these. Makes visible a scientifically created and distorted impression of reality. Prerequisite: at least one course each in the Behavioral Sciences and Humanities or permission of instructor.

## Zoology

### Introductory Zoology (E) ZOO 101

Principles of zoology including cell structure and metabolism, heredity, development, behavior, evolution, ecology, and the anatomy and physiology of the major groups in the animal kingdom. Background for understanding current biological problems.

### Biology of Birds (E) ZOO 161

Selected topics in avian biology: birds' migrations and navigational capabilities; breeding behavior; structural and functional specializations; origin and evolution; ecology, economics, and aesthetic relations to man. For non-biologists only. Prerequisite: one semester of biological science.

### Scientific Illustration ZOO 286A/810B

Awareness and appreciation of the field of scientific illustration, and an effective introduction to its basic techniques. Develops skills to create scientific illustrations for use in technical papers and as effective teaching aids. A finished drawing or work in each of the media covered, as well as a final portfolio of the semester's work, are required. Enrollment is limited to 20. Prerequisite: some background in basic drawing and design may be helpful.

**register  
by mail**

Full payment is mandatory at time of registration.

## Schedule of Courses 35

[illegible]



## Schedule of Courses

[illegible]



## Schedule of Courses 37

| DEPT                  | COURSE | SCHEDULE | TITLE                      | MEETING TIMES | CORE CR | BLOG ROOM |
|-----------------------|--------|----------|----------------------------|---------------|---------|-----------|
| SEC                   | NUMBER |          |                            |               |         |           |
| I-T-A-L-I-A-N         |        |          |                            |               |         |           |
| ITAL                  | 110    | 304202   | ELEMENTARY ITALIAN         | 7:45-10:45    | 3CR     |           |
| ITAL                  | 120    | 304202   | ELEMENTARY ITALIAN         | 7:45-10:45    | 3CR     |           |
| ITAL                  | 130    | 304202   | ELEMENTARY ITALIAN         | 7:45-10:45    | 3CR     |           |
| L-A-T-I-N             |        |          |                            |               |         |           |
| LATIN                 | 110    | 304202   | ELEMENTARY LATIN           | 7:45-10:45    | 3CR     |           |
| LATIN                 | 120    | 304202   | ELEMENTARY LATIN           | 7:45-10:45    | 3CR     |           |
| LATIN                 | 130    | 304202   | ELEMENTARY LATIN           | 7:45-10:45    | 3CR     |           |
| L-E-G-A-L             |        |          |                            |               |         |           |
| LEGAL                 | 391M   | 305323   | SEM-FIRST ANNUAL MEETING   | 7:45-10:45    | 1CR     |           |
| LEGAL                 | 391M   | 305323   | SEM-FOURTH ANNUAL MEETING  | 7:45-10:45    | 1CR     |           |
| LEGAL                 | 391M   | 305323   | SEM-FIFTH ANNUAL MEETING   | 7:45-10:45    | 1CR     |           |
| LEGAL                 | 391M   | 305323   | SEM-SIXTH ANNUAL MEETING   | 7:45-10:45    | 1CR     |           |
| LEGAL                 | 391M   | 305323   | SEM-SEVENTH ANNUAL MEETING | 7:45-10:45    | 1CR     |           |
| LEGAL                 | 391M   | 305323   | SEM-EIGHTH ANNUAL MEETING  | 7:45-10:45    | 1CR     |           |
| LEGAL                 | 391M   | 305323   | SEM-NINTH ANNUAL MEETING   | 7:45-10:45    | 1CR     |           |
| LEGAL                 | 391M   | 305323   | SEM-TENTH ANNUAL MEETING   | 7:45-10:45    | 1CR     |           |
| L-I-N-G-U-I-S-T-I-C-S |        |          |                            |               |         |           |
| LING                  | 201    | 306444   | INTRO LING THEO            | 7:45-10:45    | 3CR     |           |
| LING                  | 211    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 221    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 231    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 241    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 251    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 261    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 271    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 281    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 291    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 301    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 311    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 321    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 331    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 341    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 351    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 361    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 371    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 381    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 391    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 401    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 411    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 421    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 431    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 441    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 451    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 461    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 471    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 481    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 491    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 501    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 511    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 521    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 531    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |
| LING                  | 541    | 306444   | INTRO TO PSYCHOLOGY        | 7:45-10:45    | 3CR     |           |

## 38 Schedule of Courses

[illegible]



# University of Massachusetts at Amherst Campus Guide

39

- 1 Agricultural Engineering Bldg. B3
- 2 Army ROTC Building A5
- 3 Arnold D2
- 4 Astronomy Bldg. C2
- 5 Baker E5
- 6 Bartlett Hall B4
- 7 Berkshire Dining Commons A6
- 8 Berkshire House B5
- 9 Bowditch Hall B2
- 10 Boyden Physical Education Bldg. A4
- 11 Brett D4
- 12 Brooks D4
- 13 Brown E2
- 14 Business Administration, School of C5
- 15 Butterfield E5
- 16 Campus Center (Murray D. Lincoln) C3
- 17 Campus Center Parking Garage C3
- 18 Cance A6
- 19 Cashin E2
- 20 Central Stores B3
- 21 Chadbourne E5
- 22 Chancellor's House E4
- 23 Chenoweth Laboratory B3
- 24 Clark Hall D4
- 25 Cold Storage Bldg. B3
- 26 Conservation Bldg. D4
- 27 Coolidge A5
- 28 Crabtree D3
- 29 Crampton A6
- 30 Dickinson Hall B4
- 31 Dickinson E4
- 32 Draper Hall C3
- 33 Durfee Conservatory D4
- 34 Dwight D2
- 35 East Experiment Station D3
- 36 Education, School of D1
- 37 Emerson A5
- 38 Engineering Bldg. East C2
- 39 Engineering Laboratory C2
- 40 Faculty Club D4
- 41 Fernald Hall D5
- 42 Field E4
- 43 Fine Arts Center C5
- 44 Fisher Laboratory E4
- 45 Flint Laboratory B3
- 46 Franklin Dining Commons (South) D4
- 47 French Hall D4
- 48 Goessmann Laboratory C3
- 49 Goodell Building B4
- 50 Gorman D5
- 51 Graduate Research Center D2
- 52 Grayson E4
- 53 Greenough E5
- 54 Grinnell Arena B3
- 55 Guinness Engineering Bldg. C2
- 56 Hamlin D2
- 57 Hampden Dining Commons A8
- 58 Hampshire Dining Commons A5
- 59 Hampshire House B5
- 60 Hasbrouck Laboratory C3
- 61 Hatch Laboratory B2
- 62 Health Center (Infirmary) D4
- 63 Herter Hall B5
- 64 Hicks Physical Education Bldg. B4
- 65 Hills D5
- 66 Holdsworth Hall B2
- 67 J. Adams A8
- 68 J. Q. Adams A6
- 69 James A5
- 70 Johnson D2
- 71 Kennedy A5
- 72 Knowlton D3
- 73 Leach D2
- 74 Lewis D2
- 75 Library, University C4
- 76 Lincoln Apartments D6
- 77 Lyon, Mary D3
- 78 Machmer Hall B3
- 79 Mahar Auditorium C5
- 80 Maintenance B3
- 81 Mark's Meadow Elementary School D1
- 82 Marshal Hall & Annex D3
- 83 Marston Hall C2



- 84 Mackimmie A6
- 85 McNamara E2
- 86 Memorial Hall B4
- 87 Melville A5
- 88 Middlesex House B5
- 89 Mobile Classrooms B3
- 90 Montague House D1
- 91 Moore A6
- 92 Morrill Science Center C4
- 93 Munson Hall B5
- 94 Munson Hall Annex B5
- 95 New Africa House D5
- 96 North Physical Education Bldg. D2
- 97 Observatory E3
- 98 Old Chapel B4
- 99 Old Infirmary Group D3
- 100 Paige Laboratory C2
- 101 Patterson A6
- 102 Photo Center B3
- 103 Physical Plant Bldg. B3
- 104 Pierpont A6
- 105 Power Plant B3

- 106 Prince A5
- 107 Public Health Center, Western Mass. D4
- 108 Public Safety (Dickinson Hall) B4
- 109 Skinner Hall D3
- 110 South College B4
- 111 Stockbridge Hall C3
- 112 Student Union C3
- 113 Thatcher D3
- 114 Thayer Animal Disease C2
- 115 Thompson Hall B3
- 116 Thoreau A5
- 117 Tobin Hall B4
- 118 University Apartments D6
- 119 Van Meter E5
- 120 Washington A6
- 121 Webster E4
- 122 West Experiment Station D3
- 123 Wheeler D5
- 124 Whitmore Administration Building B5
- 125 Wilder Hall D4
- 126 Worcester Dining Commons (North) D3
- 127 Wysocki House D1



## Foreign Programs

### French Studies at Lausanne

In its study program at Lausanne in Switzerland July 12 to August 20, the French Department offers graduate and undergraduate courses in language, stylistics, literature, civilization and phonetics. Courses are taught by professors from the Swiss University system. The program includes tours of the city and environs and excursions to the Glacier of Trient, Rolle, and the Haute Savoie. Students may earn up to six credits. Cost to the student is approximately \$800 for tuition, textbooks, room and board (demi-pension) and the tours; does not include international and independent travel and miscellaneous personal expenses. Contact: Professor S. S. Weiner, Department of French, Herter Hall, University of Massachusetts, Amherst, Ma. 01002.

### German Studies in Freiburg

The Department of Germanic Languages and Literatures sponsors a summer program in Germany with ten days in Berlin and five weeks in Freiburg. Courses include intermediate and advanced German language and culture, as well as a seminar in modern German literature. Students earn six University of Massachusetts credits. There is a two week period for independent travel in Europe between the sessions in Berlin and Freiburg. Dates of the program are June 16 to August 18.

The estimated fee of \$1,000 will cover transportation, room and board, and special excursions to a number of places of cultural and historic interest, including East Berlin, Switzerland, and the Black Forest. It does not include expenses incurred during the independent travel period. The program is open to undergraduates and to graduates by permission. Contact: Michael Buckley, Director, Berlin-Freiburg Summer Pro-

gram, International Programs Office, 239 Whitmore, University of Massachusetts, Amherst, Ma. 01002.

### Summer Program in Lucca

Courses in Italian medieval art, language, literature, and the history of Modern Italy will be offered this year as the summer program in Italy opens for the first time in the city of Lucca. The program runs from June 27 to August 9. From August 9 to August 20, when the group returns to the United States, students are free to travel on their own. Students are expected to register for six university credits. The program fee of \$1250 per student includes round-trip air transportation between New York and Rome, room and board in Lucca until August 9, field trips, tuition, and health fee. With the exception of the language course, all courses are taught in English. Knowledge of Italian is not a prerequisite for participation in the program. For further information, contact Professor Roland Sarti, Department of History, 618 Herter Hall, University of Massachusetts, Amherst, Ma. 01002.

### Oxford Summer Seminar

Two groups of courses mainly in English literature, but also in five interdisciplinary areas within the humanities, are regularly offered at Trinity College, Oxford, during July and part of August. The six-week session corresponds with the regular session of this University and awards University of Massachusetts credit. The courses are all taught by Oxford dons (current or past), and the Bodleian Library is available for extensive research. Graduate and undergraduate courses are offered and vary each year according to the availability of specialists at Oxford and the interests of students. Special evening lectures by noted authorities supplement these offerings. Overall cost to the student is \$1100. Contact: Professor Ernest Hofer, Department of English, Bartlett Hall, University of Massachusetts, Amherst, Ma. 01002.

**PRESERVATION  
HALL  
JAZZ  
BAND**

**PRESERVATION HALL JAZZ BAND**  
15 JULY 1976 8 p.m. FINE ARTS CENTER \$2

# Credit-Free Workshop Program

*The Credit-Free Workshop Program is a series of workshops offered by the Division of Continuing Education specifically for persons interested in expanding their skills, furthering their careers, improving their community life, or partaking of the expertise offered by others, usually experts and teachers in their fields. The workshops are for those for whom academic credit is not a priority.*

## Admissions

The Division of Continuing Education has an open admissions policy with regard to the Credit-Free Workshops it offers. Interested persons may enroll for as many workshops as they wish without concern for their educational background.

### Sixty-five and Over Policy

Persons aged 65 and over may register, free of charge, on a space-available basis, for any Credit-Free Workshop. Please call the Records Office, 545-3653, for further information.

## Mail Registration

To register by mail complete the workshop registration form included on the back cover of this catalog, and mail with full payment to:

Credit-Free Workshops, AE76-15  
Division of Continuing Education  
P.O. Box 835  
Amherst, MA 01002

Make checks payable to: Continuing Education, AE76-15. All registrations must include a \$5 registration fee, in addition to the workshop fee, charged once.

## In-Person Registration

After May 21, walk in registrations will be accepted on a space-available basis. Come to the Continuing Education Records Office located in the lobby of Hills House. Office hours are:

Monday-Thursday, 8:30 a.m.-7 p.m.  
Friday, 8 a.m.-5 p.m.  
Saturday, 10 a.m.-1 p.m.

Enrollment in all workshops is limited to a number that is manageable and acceptable to each instructor, therefore early registration is encouraged. When requests for a workshop exceed the number to be enrolled, the Division will attempt to arrange for an additional section. Names of registrants will be placed on a waiting list in the order in which they are received.

## Fees

Credit-Free Workshops are self-funding and, in general, fees have been computed on the basis of the number of contact hours which a workshop meets. In order to make each workshop self-supporting, a minimum number of enrollments is usually necessary. When registration meets the minimum number, registrants will be notified immediately by mail with a class card which includes notice of the meeting place.

## Refund and Withdrawal

Full refund will be made by mail if a workshop is cancelled due to underenrollment.

If a student wishes to withdraw from a workshop, the Records Office must be notified in writing by mail, or in person

during regular office hours. Notifying the instructor or ceasing to attend class does not constitute official withdrawal. There will be an 80% refund for official withdrawal *after* the first workshop meeting and *before* the second meeting. There will be a 60% refund after the second workshop meeting, and before the third. After the third workshop meeting, there will be no refund.

## Refund Schedule

|                |           |
|----------------|-----------|
| <i>After:</i>  |           |
| First meeting  | 80%       |
| Second meeting | 60%       |
| Third meeting  | NO REFUND |

## Exceptions

There are NO REFUNDS for workshops with schedules covering less than three weeks unless withdrawal is effected prior to the beginning of the workshop. In cases of withdrawal prior to the beginning of a workshop, a full refund will be processed once the Records Office is notified in writing or in person.

## Cancellations

The Division of Continuing Education reserves the right to cancel, postpone, or combine workshops and to change instructors.

## Workshop Locations

Workshops will take place in Amherst. Exact locations will be announced by mail once students have registered.

## Reading Material

Reading material information may be obtained from the instructor on the first night of the workshop. Required books may be obtained at the University Textbook Annex; for hours, see Textbooks in this catalog.

## Supplies

Some workshops require supplies which are to be paid for by each participant if he or she chooses to have them. The estimated cost of these supplies is listed at the end of the workshop description. Since expense money is estimated and optional, it is not to be included in workshop and registration fees, and students should not pre-pay.

## Credit-Free Workshop Calendar

|          |                 |                                                                                         |
|----------|-----------------|-----------------------------------------------------------------------------------------|
|          | March 15-May 21 | Mail Registration                                                                       |
|          | After May 21    | Walk-in Registration<br>(space-available basis)                                         |
| Monday   | May 31          | Legal Holiday-Memorial Day                                                              |
| Tuesday  | June 1          | Workshops begin (unless otherwise noted in the workshop description)                    |
| Saturday | June 5          | Monday class schedule will be followed (unless otherwise noted in workshop description) |
| Monday   | July 5          | Legal Holiday-Independence Day                                                          |
| Saturday | July 10         | Monday class schedule will be followed (unless otherwise noted in workshop description) |
| Saturday | July 31         | Workshops end (Workshop schedules vary)                                                 |



# 42 Workshops

## Workshop Descriptions

### Arts, Crafts, Skills

#### Gravestone Rubbing D001

Melvin G. Williams: Ph.D.

Morning session: slide-illustrated discussion on artistic and historical attractions of New England's seventeenth- and eighteenth-century graveyards. Afternoon session: guided practice in making gravestone rubbings, using both oil and wax techniques. Expenses are \$5. Saturday, June 1, 10 a.m.-3 p.m., \$11.

#### Handbuilding With Clay D002

Susan L. Friedman: M.F.A. Candidate

Acquaints beginners with handbuilding techniques in clay. Includes slab, coil and pinch pot techniques as the means for familiarizing the student with the properties of clay. Then students undertake a project of their own choosing. Final piece is produced as an original clay sculpture through a plaster casting technique. Expenses are \$15. Nine weeks, Tuesday, 7-10 p.m., \$50.

#### Pottery D003

Frederic A. Englander: Potter

Techniques of the potter's wheel, glazes, clay chemistry and handbuilding. Stoneware clay and glazes are fired in a reduction atmosphere to cone 10. Includes opportunity to fire eight pots. Additional pots may be fired for a minimal fee. Expenses are \$5. Six weeks, Tuesday and Thursday, 7:30-9:30 p.m., and Saturday, 10 a.m.-12 noon, \$65.

#### Puppetry D004

Betsy Morris: B.F.A., M.F.A. Candidate

The art of designing and constructing both hand puppets and marionettes from readily available materials. Includes sock puppets, cloth puppets, household or found-object puppets, papier-maché and plastic wood hand puppets. Improvisational puppet theatre with emphasis on characterization through handling of the puppet and vocal technique (including dialect) of the operator; puppet stage design and playwrighting. Expenses are \$6. Nine weeks, Wednesday, 6:30-9:30 p.m., \$50.

#### Wood and Linoleum Block Printing D005

Jane Liebman Wolff: M.A.T., Artist

Handprinting methods are used to create both black and white and color prints. The fine art of printing techniques and the care and use of tools are discussed. Students are encouraged to explore various media and design problems. Emphasis is on individual growth and expression. Estimated expenses are \$10-15. Nine weeks, Tuesday, 7-10 p.m., \$50.

### Dance/Movement

#### Ballet: Beginning D006

Ellen Inkellis: Dance Student at UMass

For those with little or no ballet or dance. Excellent exercise and a great aid in improving posture, carriage and grace. Nine weeks, Tuesday and Thursday, 7-8:30 p.m., \$50.

#### Creative Movement D007

Deborah Waldron

The basics of creative movement. Includes the development of the individual's potential, role of exercise and movement in good health, posture, and body awareness. Demonstrates exercises in movement techniques which strengthen, limber and balance muscles while avoiding strenuous effort. Includes techniques from ballet, modern, yoga, orthotherapy, dance therapy, jazz, and their role in creative movement. Nine weeks, Thursday, 6:30-9:30 p.m., \$50.

#### Modern Dance: Beginning D008

Donna Lee Potter: Dancer, University Dancers

Provides awareness of body, increases control, flexibility and stamina through the Alwin-Nikolais dance technique. Focus is on discipline and pure enjoyment of movement. No previous dance training necessary. Consistent attendance encouraged. Two sections: 1) Six weeks, Monday and Wednesday, 9-10:30 a.m., \$30; 2) Six weeks, Monday and Wednesday, 6:30-8 p.m., \$30.

#### Relaxation and Movement D009

Deborah Waldron

Movement is an integral part of life. For those who experience muscular problems during activity, explores subtle exercises that integrate movement, massage, and relaxation aimed at greater ease and efficiency in the performance of any activity. Helps in unlearning poor habits, and learning to center so that muscles work in unison. Suggested reading: Mabel Todd, *The Thinking Body*; George Downing, *The Massage Book*. Nine weeks, Wednesday, 7-10 p.m., \$51.

### Drawing

#### Cartoon, Comic Strip, and Comic Book Art D010

Brian Turner: Cartoonist

Graphic and storytelling aspects of gag and political cartoons, comic strips, and comic books. Emphasis on techniques, concepts, and execution. Includes some aspects of marketing, effect of comic strip on film, and animation. Workshop geared to individual levels. Nine weeks, Thursday, 7-10 p.m., \$53.

#### Imaginative Drawing D011

Betsy Morris: M.F.A. Candidate

Three basic approaches to drawing: learning to use one's inner resources for forms and ideas without being dependent upon seeing an external model; to focus attention on specific forms and then analyze them in drawing; to use natural forms as direct resource material for individualized expression. Two slide presentation/discussions and two outdoor sessions may be arranged. Nine weeks, Tuesday, 6:30-9:30 p.m., \$51.

#### Portrait Drawing D012

Jean L. Emmons: M.F.A. Candidate

Portrait drawing using photographs. Knowledge of proportion, lighting, formality and informality, and the artist's attitude towards the sitter. Includes a variety of drawing techniques. Expenses are \$20. Six weeks, Wednesday, 7-10 p.m., \$30.

### East West Integral Studies

*The East West Integral Studies Program is a composite of courses and workshops designed to be a means of sharing knowledge and skills with one another. Presented in Amherst by the Division of Continuing Education in association with the East West Foundation for One Peaceful World, located in Boston, the Integral Studies Program covers a broad range of subjects from both East and West, including practical study and experience, along with the underlying principles and theory. It is our hope that the Integral Studies Program will help provide the understanding and practical means for the creation of health, happiness, and freedom through the development of a wholistic view of life.*

#### Acupuncture Massage: Beginning D013

Ken Burns: Specialist in Oriental Medicine and and Philosophy, Teacher of Shiatsu Massage and Acupuncture Massage, East West Foundation

Acupuncture (Shiatsu, or finger pressure) massage, unlike Swedish massage, aims at treating illness or imbalance within the body by re-adjusting the flow of ki or life energy along the acupuncture points and meridians. Requires no specialized knowledge or instruments, and has been commonly practiced in the Orient for thousands of years. Workshop covers basic oriental methods of diagnosis and how to locate important points. Students learn to give a complete massage. Suggested reading: Michio Kushi, *Acupuncture and Ancient and Future Worlds*; George Ohsawa, *Acupuncture and the Philosophy of the Far East*; Ilza Vieth, *The Yellow Emperor's Classic of Internal Medicine*. Eight weeks, Wednesday, 6:30-9:30 p.m., \$50.



## Cooking: The Art of Natural Food and Macrobiotic Cooking

**D014 Olivia Oredson:** Teacher, East West Foundation, Boston, and East West Center, Minneapolis

Proper preparation of healthful and delicious foods, using all natural ingredients, with the correct balance of yin and yang elements. Philosophy of workshop is that cooking is the highest of all human arts, and its importance is overlooked in modern society; that our health, thinking, and happiness depend primarily on the quality of our blood, which nourishes and sustains all of our cells; and that this quality is, in turn, determined by what we eat. Students learn to prepare simple and delicious grains, vegetables, soups, breads, and dessert dishes. Suggested reading: Eunice Farmlant, *Macrobiotic Cooking*; Lima Ohsawa, *The Art of Just Cooking*; Iona Teergarden, *Freedom Through Cooking*. Eight weeks, Saturday, 12-3 p.m., \$50.

## Herbal Medicine: Wild Foods D015

**Ken Burns**

Examines the sources of learning about herbs available in this area. In addition to field and forest, discusses written materials, and botanical reserves such as the Arnold Arboretum and the garden of the Woods of the New England Wild Flower Society. Herbs most prominent locally are studied in detail regarding physical characteristics, season of flowering, favored terrain, and traditional uses. The Chinese Element Theory is applied to these herbs. Includes brief survey of American, European, Russian, Chinese and Japanese Herbal Folk medicines. Discusses healing on the cosmological level, using the Chinese concept: *man and earth not two*. Eight weeks, Thursday, 6:30-9:30 p.m., \$50.

## Macrobiotics and the Development of Community D016

**Woods Johnson**

Examines the importance of developing future world communities based on the understanding of the order of the universe, or yin and yang. Emphasizes the development of natural ecological technologies, agriculture, architecture, social structures, and sources of energy, as basic prerequisites for sound future communities. Much of the material will be based on experiences gained during the on-going development of the 550-acre East West Foundation Community in Ashburnham. Eight weeks, Saturday, 3:30-6:30 p.m., \$50.

## Spiritual Practices: Introduction D017

**Sherman Goldman:** Editor-in-Chief, East West Journal

Major traditional and contemporary methods of developing spiritual awareness. Lecture and workshop in practical techniques. Spiritual basis of reality, the major religious traditions, concepts of the Messiah, the planetary spirit, ghosts and nature deities, ancestor worship, sex and spirituality, love, responsibility and meditation. Techniques include chanting, dispelling illusions, seeing past and future lives, seeing auras, levitation, palm healing, and seeing the Inner Light. Suggested reading: Ram Dass, *Be Here Now*; Stanley Krippner, *Galaxies of Light*; George Ohsawa, *The Book of Judgement*; Chogyam Trungpa, *The Two Hands of God*; *The Bible*, *The Gospel According to Thomas*. Eight weeks, Saturday, 3:30-6:30 p.m., \$50.

## Zen Meditation: Introduction D018

**Rev. Genro Koudela**

Lectures, sutra chanting, and zazen meditation. Brief outline of Zen history, Buddhism, and the practice and study in a Zen monastery; the nature of Zen and its application in daily life. Instruction on zazen postures and technique. Students are requested to bring one or two cushions and/or blanket. Eight weeks, Wednesday, 6:30-9:30 p.m., \$50.

## Film

### Basic Photography D019

**Richard Barrell**

Emphasizes techniques, materials and equipment. Provides knowledge of cameras and how they function, including lenses, filters, and various photographic accessories and their

uses. Shows how and where to find inexpensive cameras and how to select a camera for purchase. Acquaints students with various films, papers, chemicals, and photographic equipment. Darkroom work will not be required. Expenses are \$20. Nine weeks, Tuesday, 7-9 p.m., \$30.

### Experimental/Documentary Cinema from WW II to Present

**D020 Thomas Thompson:** M.F.A.

An intensive six-day course studying experimental documentary film from WW II to present starting specifically with Maya Deren in the 40's and working through Anger, Brakage, and Sharits of the 50's, 60's, and 70's. A visual feast for the eyes and minds of those interested in truly independent cinema culminated by a one-day (Saturday), 16mm film production workshop in which the class will participate in the production of a series of short three-minute experimental films. Meets June 7, 8, 9, 10, 11 from 6-11 p.m., and June 12 from 10 a.m.-5 p.m., \$60.

### Super 8 Filmmaking: Introduction D021

**Roger Sherman**

Film as personal vision, including the meaning of personal expression, communication, witness, fantasy and self-discovery. The format is based upon production and discussion and will concern itself with history, theories of film, the media as social tool, camera use, editing, and documentary, experimental and home movies. Students must have access to Super 8 cameras. Editing equipment supplied. Expenses are \$50 for equipment, film and processing. Nine weeks, Tuesday, 9 a.m.-1 p.m., \$65.

## Folk Music

### American Folk Music Tradition D022

**David Stuart Knishkowsky:** M.A., English

Surveys American Folk Music with extra emphasis on the New England tradition. Includes background and development of folksongs, regional development, political expression, Woody Guthrie, and a brief look at the beginnings of jazz and modern music. An extensive bibliography will be supplied for those interested, but workshop makes no demands on the student except for an honest interest. Six weeks, Tuesday, 7:30-10 p.m., \$27. Begins June 21.

### Folk Guitar Finger-Style: Basic D023

**Vincent Mitchell**

Includes tuning; care of guitar; reading music; tablature; various finger-picking styles; songs traditional and by Paxton, Hurt, Cohen; chording; back-up picking; basic theory. Nine weeks, Monday, 7-9 p.m., \$32.

### Instrumental Folk-Rag Guitar: Intermediate D024

**Vincent Mitchell**

Finger-style guitar as solo instrument, music reading review, theory, guitar chording system, back-up picking, position scales, listening, playing, basic transcription. Songs by Fahey, Hurt, Scott Joplin. Nine weeks, Tuesday, 7-9 p.m., \$32.

## Home

### The Care and Feeding of Houseplants: Plant Parenthood

**D026 Susan J. Roy:** Horticulturist

Basic horticultural practices are brought to bear in the ongoing care of a typical collection of houseplants. Includes: a short history of the adaptation of plants to the house; a discussion of the environmental and chemical influences which affect the health of plants under the special conditions of an average home; basic discussion of houseplant pathology, entomology and remedies. Construction of a simple terrarium. Expenses are \$5-15. Nine weeks, Wednesday, 6:30-9:30 p.m., \$51.

### Colonial Restoration and Interior Decorating Ideas D027

**Stephen A. Olivo, Jr./Victoria L. Olivo, Contractor, Interior Designer**

Restoration and interior decorating with a personal emphasis. The why's, how's, and what's of recreating the look of



## 44 Workshops

colonial times in a workable, modern lifestyle. Field trips to homes restored by the instructors achieve a closer look at reasonably authentic and affordable restoration. Students learn the key to imaginative but simple Early American decorating, and the textures, moods, and settings of Colonial New England. Nine weeks, Thursday, 7-9 p.m., \$30.

### From the Ground Up: Landscaping and Grounds Maintenance for the Homeowner D028

Susan J. Roy: B.S., Plant and Soil Sciences; Arborist  
Basic horticultural principles in solving common problems that arise when landscaping. Student selects a project situation and applies topics. Discussions include selection and care of trees and shrubs, lawns, ground covers and mulches, maintenance of plant material, fertilizer and pesticide use, basic pathology and entomology. Ends with a critique of the individual projects and some forays into applied fields, such as gardening in containers. Nine weeks, Tuesday, 6-9 p.m., \$51.

### Home Buyer's Workshop D029

David W. Ryan: Real Estate Broker  
Steve Weisman: Lawyer

What a home buyer should know to make an intelligent purchase decision. Includes: legal aspects, construction, insurance, obtaining a mortgage, and negotiating. Reference materials provided and open discussion encouraged. Three weeks, Tuesday, 7-10 p.m., \$17.

## Language and Literature

### Creative Writing: Fiction D030

Jeffrey Laurie: M.F.A. Candidate

Seminar to review students' writing. Two or three stories each week, with emphasis on character, dramatic development, and narrative control. Feedback from class members and the instructor. Instructor available for individual consultation. Nine weeks, Wednesday, 7-9:30 p.m., \$46.

### Finding One's Way With Shakespeare D031

John Lacey: Professor, Buck's County Community College, Newton, Pennsylvania

Walk the brooding halls of Elsinore with Hamlet in his tormenting questioning of the riddles of existence; carouse and lust with Falstaff and Prince Hal in the colorful Boar's Head Tavern; rejoice in the lyricism of young love with Romeo and Juliet; rage against the injustices of the world with King Lear; recreate and renew the magic and mischief of a moonlit midsummer night; suffer the destruction of self with Othello in his jealous passion; find the center point of balance with Prospero and his hardwon vision of life's purposes. For the person who always wanted to find the excitement, relevance, and personal meaning that comes to vital life in Shakespeare's dramas. Five or six plays are explored in a free-moving workshop atmosphere. Estimated expenses are \$6-8. Nine weeks, Wednesday, 7-10 p.m., \$50.

### Sign Language and Finger Spelling: Advanced D032

Stanley Patrie: Teacher of the Deaf

Helps the student become more fluent in both expressive and receptive sign language. Introduces what is known as AMESLAM, a contraction of "American Sign Language," in which facial expression and a certain amount of "body English" play an important part. Six weeks, Wednesday, 7-9:30 p.m., \$27.

### Sign Language and Finger Spelling: Beginning D033

Stanley Patrie: Teacher of the Deaf

Manual communication as used by most deaf people in this country. Includes a brief history of the use of the language of signs, background information on deafness and how it affects those who have been born deaf or lost their hearing later in life. Students converse with totally deaf people, including the instructor, who is also deaf. Required text: Lottie Riekehof, *Talk to the Deaf*, Gospel, \$7.15. Six weeks, Tuesday, 7-9:30 p.m., \$27.

### Writing Well D034

John Lacey: Professor, Buck's County Community College, Newton, Pennsylvania

For the business, professional, or lay person who wishes to

improve his/her ability to write well in everyday situations. Development of individual mode or style of expression, to shape each communication to fulfill its function. Directed to individual problems and difficulties with participants coming to grips with the idea that writing well is possible and necessary in everyday business communications, in professional transactions, and in technological reports. Nine weeks, Tuesday, 7-10 p.m., \$50.

## Personal Growth

### Hatha Yoga: Beginning D035

Yael Ariel

Presents Yoga as a system of health through physical and mental disciplines designed to help improve body fitness and appearance. Concern is with body as a whole, as well as each individual part. Seven weeks, Tuesday, 7-8:30 p.m., \$20.

### Hatha Yoga: Intermediate and Advanced D036

Yael Ariel

Brings students to their best possible performance of the basic yoga postures. Emphasizes straightness in balance positions, increasing repetitions as strength develops, and new postures. Students learn how to meditate. Seven weeks, Thursday, 7-8:30 p.m., \$20.

### How to Fight City Hall! D037

Fran McNulty: City Councilor, Northampton

Encourages citizens to work for positive changes at all levels of government, whenever and wherever they see a need or identify a problem. Guests who have learned how to deal with bureaucracies at every governmental level in Massachusetts will lecture and lead discussions. The individual sessions will be adapted to the most current issues that may arise during the workshop. Estimated expenses are \$2.50. Six weeks, Tuesday, 7-9:30 p.m., \$26.

### Middle Age: Weekend Workshop D038

Marga Coler: R.N.; Ed.D.

Investigates the important issues of middle age: identity; changing self-concept and its effects on others; relationships with family, support systems, work and the labor market; decision-making. Saturday, June 5, 9 a.m.-6 p.m.; Sunday, June 6, 9 a.m.-4 p.m., \$30.

### Self Defeat and Self Realization D039

John Barbaro: Ed.D. Candidate

Self-defeating behaviors are those habits and personal patterns of living that impede the achievement of one's goals. Workshop systematically isolates those behaviors and their different aspects. Underlying motivations are outlined and workable alternatives are found. Suggested paperback reading: M. Schiffman, *Gestalt Self Therapy*; A. Lakein, *How to Get Control of Time and Your Life*; S.J. Warner, *Self-Realization and Self-Defeat*. Nine weeks, Tuesday, 7-9:30 p.m., \$41.

### Self Defense for Women and Men D040

John Barbaro

Rudimentary working knowledge of how to defend oneself, while causing as little damage to one's opponent as possible. The techniques are drawn from Aikido and simplified. Acquisition of skills so that student can participate in any Aikido class on a basic level. Rape and assault situations are outlined and discussed. Nine weeks, Tuesday and Thursday, 10-11:30 a.m., \$51.

### The Tarot: An Introduction to its Psychology and Symbolism D041

Paul Zelley: M. Div.; M.A.

Basic techniques of meditation using the archetypal Tarot card symbols. The Tarot trumps may be viewed as keys that unlock an individual's personal unconscious to lead to a greater awareness of the spiritual or higher self. Detailed analysis of the Tarot symbols and their relationship to everyday life. Discussions consist of a history of the Tarot, modern profane practices, such as fortune telling, and current misconceptions. Students make Tarot cards. Expenses are \$3.50 for cards. Nine weeks, Tuesday, 7-9 p.m., \$30.



## Women

### Assertiveness and Beyond: Training in Assertive Behavior for Women D042

Sheila Davis Inderlied: Ed.D., Leadership and Organizational Development

Considers implications of using assertive behavior in varied situations; the concept of androgyny; cultural myths about women and feminine stereotypes. For the professional woman, the woman in school, business or public service, and others. Friday, June 5, 7-10 p.m.; Saturday, June 6, 9:30 a.m.-5 p.m.; Thursdays, June 10, 17, 24, and July 1, 7-9 p.m.; Saturday, July 10, 10 a.m.-4 p.m., \$43.

### Women Working It Out: Life Planning/Career Development D044 Marcia McCann, Bette Taylor: Women's Programming Coordinators, Division of Continuing Education

Planned personal and/or professional development process with a focus on women's issues as they relate to women/work/education. Estimated expenses are \$10. Six weeks, Tuesday, 6:30-9:30 p.m., \$32.

## Working With Fabric

### A Busy Person's Approach to Patchwork D045

Victoria Olivo: Designer

The use of patchwork in making quick, inexpensive changes in one's home and clothing in minimum amount of time. Includes patchwork quilts that can be sewn in two weeks; pillows, pot holders, samplers, and other small color spots for the home; and application of calico on clothing using recycled material such as denim. Knowledge of sewing machine necessary. Three weeks, Tuesday, 7-9 p.m., \$10.

### Crewel and Creative Stitchery D046

Agnes Moustakis: Certified Teacher of Needlework

Instruction in the techniques of transferring patterns and the learning of 20 different stitches (advanced stitches for advanced students). Color, balance, and design stressed. Application to a selected piece carried through to blocking and completion. Estimated expenses are \$8-12. Six weeks, Wednesday, 7-10 p.m., \$30.

### Fabric Design and Printing D047

Carolyn Ray: M.F.A.

The design and printing of four-yard lengths of fabric in one and two colors. Includes the construction of a 4½ foot silk-screen, dye-mixing, use of paper and lacquer stencils, and a survey of design principles (figure-ground relationships, line vs. shape, and transparency). No prerequisites, although design and basic print-making background would be helpful. Expenses are \$15-25. Three weeks, Tuesdays and Thursdays, 6:30-9:30 p.m., \$30.

### Fundamentals of Weaving D048

Mary Canner: Fiber Artist

The fundamentals of handweaving, including utilizing card-board and simple two or four harness frame looms constructed in class. Work also with a standard four harness loom including a full treatment of warping and dressing a loom as well as the fundamentals of drafting, and draw-downs. Portable four harness floor looms will be available on a rental basis for those students who wish to pursue extra work on floor looms. Emphasis on exploration of the creative possibilities of handweaving through experimentation with basic weave structures, fibers, colors and textures. Student projects may be functional or non-functional ranging from fiber sculptures, wall hangings and tapestries to such things as pillows, bags, and small rugs. Expenses are \$10-15. Nine weeks, Tuesday, 7-10 p.m., \$50.

### Print Your Own T-Shirt! D049

Carolyn Ray: M.F.A.

Students will build and stretch silkscreens, and design and print T-shirts in one color and multicolor. Basic silkscreen techniques (paper lacquer and photo stencils), and ink-mix-

ing. Expenses are \$10-15. Three weeks, Monday and Wednesday, 6:30-9:30 p.m., \$30.

### Spinning and Natural Dyeing D050

Mary Canner: Fiber Artist

Spin and dye unique yarns for creative projects in weaving, knitting, crewel, etc. Methods of handspinning using drop spindles, whole fleece, teasing, carding with hand carders and carding machine, plying spinning textured and heather yarns, sources for supplies and equipment, plus work with other fibers including flax, alpaca, cotton and cashmere. The study of natural dyes from native and foreign natural substances, using all the special procedures for the ancient plant and animal dyes of indigo, cochineal, and madder. Expenses are \$10-15. Nine weeks, Thursday, 7-10 p.m., \$50.

### Upholstery D051

Walter Rupp: Upholsterer

Students learn step by step reupholstering procedure of typical piece of furniture. Demonstrations enable students to work independently. Questions and problems handled on an individual basis. Expenses are \$10. Nine weeks, Wednesday, 6:30-9:30 p.m., \$50.

### Weaving: Basic and Advanced Off-Loom Techniques D052

Blair Tate: B.F.A., Rhode Island School of Design

Various textile techniques: weaving, basketry, knitting, netting, sprang, finger and card weaving, with the purpose of gaining insight into their interrelationships and using this information for the creation of either a functional or non-functional object. Materials may be either traditional or experimental, such as ribbon, rope, chain, paper, rags, aluminum foil, etc. Expenses are \$9-29. Nine weeks, Thursday, 6:30-9:30 p.m., \$51.

## And More Workshops

### Auto Mechanics D053

Robert Warner: Mechanic

Operation and maintenance of automobiles at a basic and practical level. Includes troubleshooting, tune-ups, preventive maintenance, wheel-bearings and brakes, clutches, minor body repair, fuel economy, emission controls, ignition systems, and parts-buying. Each student has a two hour lab when a tune-up can be done on one's own auto under the supervision of the instructor. One lab session, 11 a.m.-1 p.m., is to be scheduled at student's convenience after the first class meeting. Tools and other equipment are provided by the instructor. Nine weeks, Saturday, 9-11 a.m., \$40.

### Chapter 766: Parents' Rights, Children's Rights and the Role of the Parent at the Core Evaluation D054

Peter Willner: Ed.D.

Studies the recently implemented special education law, Chapter 766. Focuses on the role of the parent at the Core Evaluation process. Includes discussion of the rights of the parent and the child within the school and at the time of the child's evaluation, and discussion of public school program options available to special-needs students as mandated in the Chapter 766 regulations. Three weeks, Wednesday, 7-10 p.m., \$15.

### Hang Gliding: Basic Pilot Training D055

Michael J. Morrissey, Charles La Versa: Glider Sports International approved instructors

Basic pilot (ground and flight) training for foot-launched ultralight aircraft. Includes history and development of foot-launched aviation; aerodynamics; micrometeorology for the glider pilot; safety; maintenance; and actual flight experience. Three classroom sessions of three hours each per student and two flight sessions of four hours each. All equipment furnished. Recommended reading: Bob Skinner and Rich Finley, *Basic Guide to Rogallo Flight, Flight Realities*. On-the-hill flight sessions scheduled at the students' convenience, weather permitting. Optional insurance is \$15. Three weeks, Wednesday, 7-10 p.m., \$60.

### How to Find the Information You Need D056

James Pursley: M.L.S., Community Information Specialist

Introduces information resources and how to use them. Designed to make people information self-sufficient.



# CREDIT-FREE WORKSHOPS - REGISTRATION

SUMMER 1976

## DIVISION OF CONTINUING EDUCATION - UNIVERSITY OF MASSACHUSETTS/AMHERST

The following information must be provided before your application can be processed.

Name ☐ Mr ☐ Ms ☐ LAST NAME ☐ INITIAL ☐ FIRST NAME ☐

Address ☐ NUMBER ☐ STREET ☐

CITY ☐ STATE ☐ ZIP CODE ☐

Phone No. ☐ Area Code ☐ If No Phone, Write "None" ☐ Student No. ☐

Business (Day) Phone ☐ ☐ Male ☐ Female

Marital Status ☐ Age ☐

**OPTIONAL:** Your answers to these questions will guide us in planning future workshops. The information will be confidential if you choose to answer.

1. How did you find out about these workshops? ☐

2. What other workshops would you like to have offered? ☐

3. Do you work? ☐ If yes, at what? ☐

4. Are you a student? ☐ If yes, where? ☐

5. Other comments ☐

### OFFICE USE ONLY

AE76-15

Total Amount Due \$ ☐

Amount Received \$ ☐

☐ Cash

☐ Check No. ☐

☐ S.C.F.W.

Received By ☐

Date Received ☐

Comments: ☐

1. Workshop No. ☐ Section ☐ Title: ☐

Day: ☐ Time: ☐ Fee: ☐

\*Alternative Choice No. ☐ Section ☐ Title: ☐

Day: ☐ Time: ☐ Fee: ☐

2. Workshop No. ☐ Section ☐ Title: ☐

Day: ☐ Time: ☐ Fee: ☐

\*Alternative Choice No. ☐ Section ☐ Title: ☐

Day: ☐ Time: ☐ Fee: ☐

3. Workshop No. ☐ Section ☐ Title: ☐

Day: ☐ Time: ☐ Fee: ☐

\*Alternative Choice No. ☐ Section ☐ Title: ☐

Day: ☐ Time: ☐ Fee: ☐

\*Alternative Choice — In event of cancellation or over enrollment, your second choice.

### FULL PAYMENT MUST ACCOMPANY MAIL REGISTRATION

Make checks payable to: Division of Continuing Education, AE76-15  
Send to: Credit-Free Workshops, AE76-15  
Division of Continuing Education  
P.O. Box 835  
Amherst, Ma. 01002

TOTAL COURSE FEES \$ ☐  
REGISTRATION FEES \$ ☐ 5.00

TOTAL AMOUNT DUE AND ENCLOSED \$ ☐

Topics include information gathering strategies, library research, public documents and records, socio-economic data and special areas of concern to students. Small groups. Nine weeks, Thursday, 7-9 p.m., \$33.

## Toward Tomorrow: A Symposium of Alternatives

*The Toward Tomorrow Program is a series of workshops designed to provide people from all walks of life with new and valuable information about how to deal with a rapidly changing environment.*

*Participants interested in learning through these "hands-on" workshops will gain practical knowledge in such areas as wind power, solar heat, methane gas, home-steading, energy conservation and home building and remodeling.*

*Workshop instructors are experts in their respective fields and emphasize the "how to" aspects of the subject matter. Whenever possible, students will be involved in building, measuring, growing and problem-solving.*

### Toward Tomorrow Schedule

#### Five Day Workshops

|                  |              |          |
|------------------|--------------|----------|
| Monday           | 10 a.m.-noon | 2-5 p.m. |
| Tuesday-Thursday | 9 a.m.-noon  | 2-5 p.m. |
| Friday           | 9 a.m.-noon  |          |

#### Four Day Workshops

|                |             |          |
|----------------|-------------|----------|
| Tuesday-Friday | 9 a.m.-noon | 2-5 p.m. |
|----------------|-------------|----------|

#### Three Day Workshops

|          |             |          |
|----------|-------------|----------|
| Friday   | 1-5 p.m.    |          |
| Saturday | 9 a.m.-noon | 2-5 p.m. |
| Sunday   | noon-5 p.m. |          |

### Buying and Remodeling Older Homes D057

Nicholas T. Dines: Associate Professor of Landscape Architecture

How to assess and buy an older home with remodeling in mind. What to look for in heating, plumbing and electrical systems; what to look for in house construction, including foundations, frame, and roof; how to estimate the need for and cost of major repairs; how to lay out floor plans and construction details; and how to schedule work. July 19-23, Monday-Friday, \$70.

### Design and Build Your Own Home D058

Frank Brookshire: Architect

Slides and field trip to house under construction. Half time devoted to the elements that affect design: site, sun, wind, space requirements, materials, function (with emphasis on low-energy houses). Half time devoted to house-building: foundations, framing, doors and windows, heating systems (including wood, solar), plumbing, wiring, codes and zoning requirements. Actual problem-solving by students done in informal afternoon workshop sessions. Two sections: 1) June 28-July 2, Monday-Friday, \$70; 2) July 19-23, Monday-Friday, \$70.

### Energy Conservation and Design D059

Douglas Coonley: Architect

Energy conservation methods and applications to existing homes, new home design and other small buildings. Conservation of heat, cooling, ventilation, water use and supply, waste recycling and disposal, transportation, materials and overall costs are examined and applied to projects which participants have or will design during the workshop. Emphasizes readily available technology and equipment. July 9-11, Friday-Sunday, \$50.

### Homesteading D060

Leandre and Gretchen Poisson: Homesteaders

Covers many areas, including decentralized living, survival gardening, food preservation and processing, shelter, solar home heating, solar water heating, wind power, cash crops

and cottage industries. Maximum utilization of solar energy for a self-sufficient lifestyle. July 19-23, Monday-Friday, \$70.

### Integrated Energy Systems D061

Dan Scully and Doug Coonley

Emphasis on advantages versus disadvantages and capabilities of each source of energy. Also stresses interdependent integration of these systems with particular implications for building design. Exploratory design of an energy system for a home. July 6-9, Tuesday-Friday, \$60.

### Knowing Trees D062

Herschel G. Abbott: Professor of Forestry

Introduction to dendrology (study of trees); the taxonomy, ecological habits, geographical distribution and economic and social values of major tree species in North America. Special consideration is given to learning to identify the more common trees and shrubs in Massachusetts. July 6-9, Tuesday-Friday, \$60.

### Methane Gas Generation Workshop D063

Les Auerbach: Author, Consultant

Produce power from manure, sewage or any organic material. Fuel electric generator, greenhouse, home, car, tractor, refrigerator, freezer, milk cooler, etc. Emphasis on construction techniques; inexpensive materials. Students participate in the planning, design and construction of a working methane generator. Geared to creating abilities in each participant so that he or she may return to own environment and produce a tangible, material, fuel-producing, waste-recycling system. Results guaranteed! July 12-16, Monday-Friday, \$70.

### Methane Gas Generation Seminar D064

Les Auerbach

Focus is on the concepts, ideas, and processes necessary to develop a source of energy (methane gas) as part of a planned, environmentally sound, integrated life-support system. At the end of the seminar participants will have the knowledge and ability to produce their own power for practical uses relevant to each person's individual situation. July 16-18, Friday-Sunday, \$50.

### Organic Gardening: French Intensive Bed Method D065

Leandre and Gretchen Poisson: Rhode Island School of Design, Royal College of Art and London School of Economics

Covers French intensive bed method of gardening from organic soil building to harvest. An education for any vegetable gardener from the back yard to the complete homestead/survival gardener. July 9-11, Friday-Sunday, \$50.

### Practical Wind Power D066

Douglas Coonley

A consideration of wind as a source of energy for both home and community use. Emphasis on site selection, site and building design to facilitate the use of wind, alternative windmill designs, how to integrate with other energy sources, energy conservation, energy storage, auxiliary energy, control systems and cost. Participants do preliminary design of a wind system at their site location. July 16-18, Friday-Sunday, \$50.

### Solar Heat: Air and Water Collectors D067

Dan Scully: Architect

Discussion of solar heating and cooling systems utilizing air-cooled and water solar collectors, how they work and their various applications, ranging from food drying to space heating. Various types of collector designs are demonstrated. Alternatives for heat storage and distribution, and how they influence building design. Students participate in in-class design and construction of an air collector. July 9-11, Friday-Sunday, \$50.

### Solar Heating: Introduction D068

Douglas Mahone: Graduate Student in Architecture at M.I.T.

Introduction to the uses of solar energy for meeting the energy needs of homes and small buildings. Includes history of solar projects, air heaters versus water heaters, heat stor-



# 48 Workshops

age, energy conservation, commercially available equipment, solar heating system design, economics and solar heating. In addition to classroom work, students build actual working prototypes of collectors and test their performance. Students encouraged to start their own designs and coached in developing individual solutions. June 28-July 2, Monday-Friday, \$70.

## Wood-Stove Theory and Practice D069

Jay Shelton: Assistant Professor of Physics  
Fundamental theory of and experiments with chimney draft and flow, combustion, stove design, and temperature, heat, and heat transfer. Demonstrations of Franklin versus air-tight stoves, dry versus green wood, etc. June 28-July 2, Monday-Friday, \$70.

## Index

### A

Academic Calendar/5  
Academic Credit/13, 20  
Accounting, Courses in/20  
Add Period Deadlines/13  
Admissions/17  
Advising, Undergraduate/15  
Afro-American Studies, Courses in/21  
Animal Sciences, Courses in/21  
Anthropology, Courses in/21  
Art  
    Courses in/21  
    Exhibitions/22  
Arts & Crafts Festival/16  
Astronomy, Course in/22  
Auditing/14

### B

Ballet Film: Nureyev/15  
Bicentennial Revelry/10  
Biochemistry, Courses in/22  
Blocks, Summer Session  
    Calendar/3  
    Schedule/4  
Board of Trustees/1  
Botany, Courses in/22  
Business Administration, Courses in/22  
Bus Transportation/15

### C

Cancellations/13  
Change of Program/13  
Chemical Engineering, Courses in/22  
Chemistry, Courses in/22  
Chinese, Course in/23  
Communication Disorders, Courses in/23  
Communication Studies, Courses in/23  
Comparative Literature, Course in/23  
Computer and Information Science,  
    Courses in/23  
Core Requirements/14, 20  
Course Changes/13  
Course Descriptions/20  
Course Fees/14  
Course Selection/20  
Credit-Free Workshops/41

### D

Drop Period Deadlines/13

### E

Economics, Courses in/24  
Education, Courses in/24

Electrical and Computer Engineering,  
    Course in/25  
English, Courses in/25  
Enrollment/12  
Entomology, Course in/26  
Environmental Design, Course in/26  
Environmental Sciences, Course in/26  
Expenses/14

### F

Fees/14  
Fee Waivers/14  
Fife and Drum Corps Muster/8  
Financial Aid/17  
Financial Aid Office/17  
Financial Assistance/16  
Food and Resource Economics,  
    Courses in/26  
Foreign Programs/40  
Forestry, Course in/27  
French, Courses in/27

### G

General Business and Finance,  
    Courses in/27  
Geography, Course in/27  
Geology, Course in/27  
German, Courses in/27  
Grades/13

### H

Health Services/17  
History, Courses in/27  
Honors, Course in/27  
Hotel, Restaurant and Travel  
    Administration, Courses in/27  
Housing and Food Services/15, 16  
Housing Office/18  
How to Register/12

### I

Identification Cards/13  
Industrial Engineering, Course in/28  
Italian, Courses in/28

### J

Latin, Courses in/28  
Law Enforcement Education Program  
    (LEEP)/16  
Legal Studies, Courses in/28  
Leisure Studies and Services, Course in/28  
Linguistics, Courses in/28

### K

Mail Registration/12, 26  
Management, Courses in/28  
Map/39  
Marketing, Courses in/28

Mathematics, Courses in/29  
Mechanical and Aerospace Engineering,  
    Courses in/29  
Music, Courses in/29

### N

Nursing, Courses in/30

### O

Optional Fees/15  
Overload of Credits/14

### P

Park Administration, Course in/30  
Parking Fees and Expenses/15  
Pass/Fail  
    Option/14  
    Policy, School of Education/14  
Philosophy, Courses in/30  
Physical Education, Courses in/30  
Physical Education Fee/15  
Professional Preparation in Physical  
    Education, Courses in/31  
Physics, Courses in/31  
Plant and Soil Sciences, Course in/31

### Q

Plant Pathology, Course in/31  
Political Science, Courses in/31  
Portuguese, Courses in/31  
Preservation Hall Jazz Band/40  
Psychology, Courses in/31  
Public Health, Courses in/32  
Public Safety, Department of/17

### R

Refund Schedule/5  
Regional Planning, Course in/32  
Registrar's Office/17  
Registration  
    Advance Registration by Mail/12  
    How to Register/12, 20  
    Walk-In Registration/12  
Registration Form/19  
Rhetoric, Courses in/32  
Russian, Courses in/33

### S

Schedule of Courses/35  
School of Business Administration,  
    Courses in/33  
Sociology, Courses in/33  
Spanish, Courses in/33  
Sport Studies, Courses in/34  
Statistics, Courses in/34  
Student Affairs/17



Student Development Center/18  
Student Services and Activities/15, 18  
Summer Credit/13  
Summer Services Fee/14  
Summer Session Offices/2

Toward Tomorrow Bicentennial Fair/6  
Toward Tomorrow Credit-Free  
Workshops/47  
Transfer Affairs/17

**W**  
Women's Studies, Courses in/34

**T**  
Theater, Course in/34  
Thesis, Dissertation, Special Problems  
and Independent Study/13, 14

**V**  
Veterans Affairs/18  
Veteran's Benefits/16

**Z**  
Zoology, Courses in/34

# Bicentennial

## Bicentennial America — Explore It For Credit

Teaching United States History Through Folk Music  
Education 390N  
July 7, 8, 9

*This unique course presents, through live music, lectures and demonstrations, an "inner view" of what participants in historical events may have felt. By placing folk songs in historical perspective, the student will obtain a revealing insight into an often overlooked aspect of American history. Attention is given to audience participation in chorus singing and other folk music expression, as well as to demonstrations of guitar, five string banjo, Appalachian dulcimer, autoharp, African and Native American drums. The course is given for one undergraduate credit at a cost of \$45.*

Special Problems in Clothing and Textiles  
Home Economics 700Y  
June 13-25

*This graduate level course introduces primary sources for research in historic textiles, costume, and furnishings in the Massachusetts Bay Colony Area. Lectures, slide presentations, special exhibits and guest speakers will be presented on the UMass/Amherst campus. Extensive tours will be made to museums such as the Merrimac Textile Museum, Slater's Mill, Historic Deerfield and the Costume Collection at the Boston Museum of Fine Arts. Students may elect to concentrate in one area. The course is given for three graduate credits, and costs \$200, which will include the cost of the tours.*

To register for these courses, or to obtain further information, contact:  
Division of Continuing Education  
Bicentennial America Courses  
Hills House North  
University of Massachusetts  
Amherst, Massachusetts 01002

MAY 18 1998

UNIV. OF MASS.  
AMHERST

Summer Session Office  
Hills House North  
University of Massachusetts  
Amherst, Massachusetts 01002

Non-Profit Organization  
BULK RATE  
U.S. POSTAGE PAID  
Amherst, Massachusetts 01002  
Permit Number 2



University of Massachusetts/Amherst





ROBERT N. DERUSHA  
UNIV. LIBRARY

01002

MSBA  
2



Fall 1976

Division of Continuing Education  
University of Massachusetts/Amherst

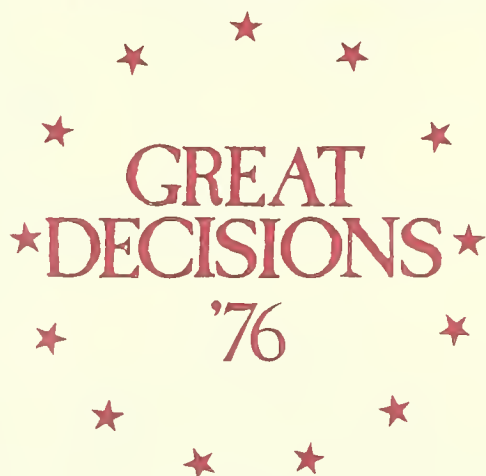


The Division of Continuing Education was founded in the fall of 1970, and since that time has extended the educational resources of the University of Massachusetts to students throughout the Commonwealth. In recognizing that education in a changing society is a lifelong necessity, the Division offers courses, programs, workshops, conferences, and services to a wide variety of non-traditional learners.

The Division's offerings fall mainly within two offices, the Center for Academic Extension and the Center for Continuing Studies. The Center for Academic Extension offers credit courses, taught mostly in the evening. Other credit offerings include the Teacher Education Program, and the Division's own bachelor's degree program, called the Bachelor of General Studies. Regular undergraduate University courses are also open to Continuing Education students on a space-available basis.

The Center for Continuing Studies offers a comprehensive Credit-Free Workshop Program each semester. Also within the Center for Continuing Studies are a number of other programs designed for the part-time, evening or non-traditional learner. These programs are in a number of areas and include the Technical Guidance Center for Environmental Quality, the Arts Extension Service, the Great Decisions Program, and Wintersession programming.

The Division of Continuing Education is located on the UMass/Amherst campus in Hills House North. Specific office hours are listed in the information section of this catalog.



## Small groups... Big ideas... Great Decisions

Great Decisions is a program bringing together citizens who meet informally in their own communities to discuss eight key foreign policy issues of critical importance to the United States. Groups can begin at any time, and Continuing Education would like to help you in whatever way it can. Please fill out the request form below and send to: Great Decisions, Division of Continuing Education, 314 Hills House North, University of Massachusetts, Amherst, Ma., 01002, or phone Lin Maria Riotto at [413] 545-3410.

### INFORMATION REQUEST FORM

Name \_\_\_\_\_ Telephone \_\_\_\_\_

Address \_\_\_\_\_

Check appropriate boxes below.

- ☐ Please tell me of Great Decisions Discussion Groups that I can join in my own locale.
- ☐ Please send me a Discussion Leaders Guide containing hints for organizing and conducting an effective discussion group.

- ☐ I would like to organize a Great Decisions discussion group in my community/neighborhood.
- ☐ I would like to serve as the Great Decisions Community Coordinator for my community.

## CONTINUING EDUCATION OFFICES

|                                                |                                                                                                                                                                                                |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Center for Academic Extension<br>545-3440      | Alan B. Ashton, Director<br>Charles E. Heller, Assistant Director                                                                                                                              |
| Center for Continuing Studies<br>545-3410      | Merilee C. Neunder, Director, Credit-Free Workshops<br>Harvey R. Stone, Director, Certificate/Training Programs                                                                                |
| Special Programs                               | Arts Extension Service, Robert Lynch, Coordinator 545-2013<br>Citizen Involvement Project, Stanley Rosenberg, Director 545-3420<br>Technical Guidance Center, Ruth Kreplick, Director 545-3420 |
| Student Services<br>545-3430                   | Joan P. Eignor, Director, Student Services<br>Harry F. Neunder, Counselor<br>Bernadine Y. Freese, Coordinator, Post-Baccalaureate Programs                                                     |
| Office of the Director<br>545-3420             | William C. Venman, Director, Division of Continuing Education<br>William Krinsky, Deputy Director, Associate Director for Services<br>Kevin F. Grennan, Associate Director for Programs        |
| Business Office<br>545-3420                    | John Shea, Business Manager                                                                                                                                                                    |
| Records and Registration<br>545-3653, 545-3430 | Registrar                                                                                                                                                                                      |
| Bachelor of General Studies<br>545-3430        | Harry Neunder, Coordinator                                                                                                                                                                     |

## TABLE OF CONTENTS

|      |                                        |  |
|------|----------------------------------------|--|
| Page |                                        |  |
| 2    | Off-Campus Information                 |  |
| 3    | Bachelor of General Studies            |  |
| 5    | Academic Calendar                      |  |
| 13   | Academic Extension Course Descriptions |  |
| 19   | Academic Extension Registration Form   |  |
| 22   | Credit-Free Workshop Registration Form |  |
| 26   | Day/Location Schedule                  |  |
| 27   | Schedule of Courses                    |  |
| 30   | Program Alternatives                   |  |
| 33   | Credit-Free Workshop Program           |  |
| 40   | Index                                  |  |

## **OFF-CAMPUS EXTENSION**

THE DIVISION OF CONTINUING EDUCATION WILL OFFER ADDITIONAL DAY AND EVENING COURSES AT HOLYOKE COMMUNITY COLLEGE. THESE WILL INCLUDE SELECTIONS FROM THE DEPARTMENTS OF COMMUNICATION STUDIES, ENGLISH, ENVIRONMENTAL SCIENCES AND HISTORY. AT THE TIME THIS CATALOG WENT TO PRESS, ARRANGEMENTS WERE INCOMPLETE. STUDENTS INTERESTED IN FURTHER INFORMATION ON UNIVERSITY EXTENSION CLASSES AT HCC SHOULD WRITE TO: CENTER FOR ACADEMIC EXTENSION, P.O. BOX 835, AMHERST, MA. 01002 OR PHONE (413) 545-3440.

### **DIVISION OF CONTINUING EDUCATION**

**UNIVERSITY OF MASSACHUSETTS/AMHERST**





# BACHELOR OF GENERAL STUDIES PROGRAMS

## The BGS Degree

The Bachelor of General Studies (BGS) is a University of Massachusetts degree available to part-time, non-traditional students through the Division of Continuing Education. The BGS is designed to be flexible and responsive to special needs that cannot be met in regular UMass programs. It requires considerable initiative and self-knowledge on the part of the student, and offers someone with firmly established goals a chance to take an active part in planning his or her program. The BGS degree has been used advantageously by three different groups of Continuing Education students: 1) those who would like to orient their degree more specifically toward a career area, as in the cases of recent graduates who have majored in Health Care Administration and Electronic Instrumentation; 2) those who are already established in a career but would like the benefits of a generalist, liberal arts degree, such as Human Relations or Liberal Studies; (3) those who are looking for a specific match of disciplines, for example, Philosophy of Art or American Literature and Library Studies.

The Continuing Education counseling staff and faculty advisors chosen by the student can aid in the design of the BGS area of concentration, which is usually 30 credits of junior-senior level college or university work, at least 15 of which must be UMass credits. This designed program, expressed as a list of courses and a thorough written argument on the BGS Proposal Form, will be judged both by the faculty advisor and the BGS Program Committee of Continuing Education. Students with appropriate Associate's degrees may enroll in already-designed programs in Criminal Justice or Fire Science, described below.

A maximum of 75 semester credits from accredited colleges and/or universities may be used in the required 120 credits needed for graduation. Other credits included in the transfer total may be those earned through the College Level Examination Program (CLEP) tests, or credits for certain types of training in the U.S. military service. BGS students should matriculate as soon as they are eligible. Graduates must maintain a grade-point average of at least 2.0 on a 4.0 scale and fulfill the University core requirements. See **Core Requirements** and **Matriculation Process**.

The Continuing Education counseling staff recognizes the difficulties inherent in creating and justifying an ambitious course of study. We encourage students, whatever the stage of their planning, to discuss their ideas for a BGS degree with a Continuing Education counselor.

## BGS Criminal Justice

The BGS in Criminal Justice is designed to build upon the Associate's degree in Law Enforcement (or its equivalent in appropriate course work) from the community colleges. People already working in the criminal justice professions, and those considering such careers, should find this program flexible enough to meet their special needs as part-time students and their particular goals in criminal justice studies. This cooperative effort between UMass/Amherst and the community colleges is intended to produce highly competent officers for the police, courts, and corrections institutions of the Commonwealth.

### *Requirements:*

1. The general BGS regulations described above apply, except that students must have earned the A.S. degree in Law Enforcement (or its equivalent), and no BGS Proposal Form is required.
2. Effective for all students who enter the program after summer, 1976, the Criminal Justice Core (not to be confused with the University core requirement which is mentioned above and described in detail elsewhere in this catalog) must be fulfilled. This core is a group of five UMass junior-senior level courses (15 credits minimum) selected from academic disciplines related to criminal justice and distributed as follows:
  - Administration/Human Relations (3 credits)
  - Communications Skills (3 credits)
  - Political Science/Legal Studies (3 credits)
  - Social/Behavioral Sciences (3 credits)
  - One core elective (3 credits) selected with the help of an advisor from the above areas.
3. Effective for all students who enter the program after summer, 1976, the required courses in one of the following career tracks must be completed:

**A. Criminal Justice** This general career track is for students seeking advanced study in psychology, sociology, political science, legal studies and other departments concerned with the social problems of crime and the nature of the criminal justice system. Required are at least 15 credits—UMass junior-senior level.

**B. Administration in Criminal Justice** Students selecting this career track generally intend to qualify eventually for supervisory positions in the criminal justice system. Required are at least 6 credits in management or administration, 3 credits in communications skills, 3 credits in psychology or sociology, and 3 credits of

approved electives.

**C. Criminal Justice Education** This track is recommended for students interested in community college teaching positions, police academy teaching, and other criminal justice instruction. In addition to course work in education, sociology, psychology, and other relevant departments, a supervised teaching internship is required. Necessary are at least 15 credits—UMass junior-senior level.

Interested students should contact one of the Student Services counselors at 545-3430 for complete course lists and other information. Junior-senior level courses that may be used to satisfy some of the above program requirements can be found in this catalog under the following department designations and numbers: BGS 201; COINS 201; COMSTU 210; EDUC 290A, 290B, 290D, 390A; GB FIN 260; HIST 337; JS 201, 391D; LEGAL 201, 202, 290D; MGT 201, 214, 230, 231; POLSCI 223, 226, 260; PSYCH 210, 280, 365, 391J; SOCIOL 224, 246, 250, 292.

## BGS Fire Science

The BGS in Fire Science is designed to build upon the Associate's degree in Fire Science Technology (or its equivalent in appropriate course work) from the community colleges. Firefighters in both public and private agencies, and people considering such careers may choose one of three possible career tracks: Fire Science Administration, Fire Science Education, and Fire Science Technology. There is considerable flexibility within the requirements of each track allowing student and advisor to plan a program tailored to specific needs and interests. This cooperative effort between UMass/Amherst and the community colleges is intended to produce highly competent professional firefighters for the Commonwealth.

### Requirements:

1. The general BGS regulations described above apply, except that students must have earned the A.S. degree in Fire Science Technology (or its equivalent), and no BGS Proposal Form is required.

2. Effective for all students who enter the program after summer, 1976, introductory courses, some of them usually taken as part of the A.S. program, are required as outlined here:

*Fire Science Administration:* Introduction to Psychology, Introduction to Sociology, Introduction to Management, Financial and Managerial Accounting, Introduction to Logic, and Introduction to Problem Solving Using the Computer.

*Fire Science Education:* Introduction to Psychology, Introduction to Sociology, Public Speaking.

*Fire Science Technology:* College Calculus (2 semesters), General Physics for Science Majors (2 semesters with lab), General Chemistry for Science Majors (2 semesters with lab).

3. Effective for all students who enter the program after summer, 1976, a minimum of 15 credits in UMass junior-senior level courses in one career track must be selected and completed:

**A. Fire Science Administration** This option is for students who aspire to managerial positions within their firefighting organizations and therefore need advanced study in management, communications skills, political science, and sociology.

**B. Fire Science Education** This career track is intended for students who have a strong desire to teach in community college fire science programs. Such positions often require Master's degrees or doctorates, but this BGS program can provide a useful beginning in advanced courses in communications skills, education, psychology, and related departments. Each student in the education option must complete a supervised internship in community college fire science instruction.

**C. Fire Science Technology** The Division of Continuing Education and the UMass School of Engineering are now designing a program that will allow firefighters to complete BGS requirements in technical training beyond the A.S. degree in subject areas like hazardous materials, radiation protection, forest protection, combustion, safety engineering, and hydraulics.

Interested students should contact one of the Student Services counselors at 545-3430 for complete course lists and other information. UMass courses that may be used to satisfy some of the above requirements can be found in this catalog under the following department designations and numbers: ACCTG 120, 130; BGS 201; COINS 122, 201; COMSTU 121, 210; EDUC 290A, 290B, 290D; GB FIN 260; HIST 337; JS 201, 391D; LEGAL 201, 202, 290D; MGT 201, 214, 230, 231; POLSCI 223, 226, 260; PSYCH 101, 280; SOCIOL 105, 224.

## BGS Courses

BGS courses are offered by the Division for University credit, and are meant either to serve the special educational needs of older, part-time students, or to provide BGS degree candidates with training in areas of concentration not available in regular University course offerings. BGS courses offered this semester are:

|          |                                                                       |
|----------|-----------------------------------------------------------------------|
| BGS 100A | Women in Society: An Interdisciplinary Approach                       |
| BGS 100B | Back to School—Into the Job Market: Women and the Life-Career Process |
| BGS 201  | Occupational Safety and Health Management                             |

For a complete description of each BGS course, see Academic Extension Course Descriptions beginning on page 13.

## ACADEMIC EXTENSION CALENDAR

|                    |                   |                                                    |
|--------------------|-------------------|----------------------------------------------------|
| Wednesday-Saturday | July 12-August 13 | Mail Registration                                  |
| Tuesday            | August 18-21      | In-Person Registration/Amherst                     |
| Wednesday          | August 24         | In-Person Registration/Holyoke                     |
| Thursday           | September 1       | Orientation for CE Students/Amherst-Hills Lobby    |
|                    | September 2       | First day of classes                               |
|                    |                   | Late Registration begins                           |
| Monday             | September 6       | Holiday (Labor Day)                                |
| Wednesday          | September 8       | Monday class schedule will be followed             |
| Saturday           | September 11      | End Add/Drop Period (withdraw no record)           |
|                    |                   | Last day to sign up for Pass/Fail or Audit options |
| Monday             | September 13      | Beginning "W" Period (withdraw with record)        |
| Thursday           | October 7         | Last day to withdraw with % refund                 |
| Monday             | October 11        | Holiday (Columbus Day)                             |
| Thursday           | November 11       | Holiday (Veterans' Day)                            |
| Tuesday            | November 16       | Thursday class schedule will be followed           |
| Wednesday          | November 24       | Thanksgiving recess begins after last class        |
| Monday             | November 29       | Classes resume                                     |
| Wednesday          | December 15       | Last day of classes                                |
|                    |                   | Last day to withdraw                               |
| Thursday           | December 16       | Final examinations begin                           |
| Wednesday          | December 22       | Last day of final examinations                     |
|                    |                   | Semester ends                                      |

## REGISTRATION INFORMATION

|                   |                                                                                                                                                                                                                                                                                                                                         |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| July 12-August 13 | Mail Registration<br><i>\$5 Registration Fee</i><br>All Academic Extension Courses                                                                                                                                                                                                                                                      |
| August 18-21      | In-Person Registration/Amherst<br><i>\$5 Registration Fee</i><br>All Academic Extension Offerings<br>Undergraduate UMass/Amherst Courses<br>(space-available basis only)<br>Location: Hills House Main Lobby, UMass/Amherst<br>Time: Wednesday & Thursday 10 a.m.-4 p.m. & 6-8 p.m.<br>Friday 10 a.m.-4 p.m.<br>Saturday 10 a.m.-2 p.m. |

|           |                                                                                                                                                                                                                              |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| August 24 | In-Person Registration/Holyoke<br><i>\$5 Registration Fee</i><br>All Academic Extension Offerings<br>Location: Building B, Room 347, Holyoke Community College, Holyoke, Massachusetts<br>Time: Tuesday 9-11 a.m. & 5-7 p.m. |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                     |                                                                                                                                                                                                                                                                                     |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| September 2 and 6-8 | Late Registration/Holyoke<br><i>\$10 Late Registration Fee</i><br>All Academic Extension Offerings<br>Location: Building B, Room 201, Holyoke Community College, Holyoke, Massachusetts<br>Time: Thursday (September 2) 6-7:30 p.m.<br>Monday-Wednesday (September 6-8) 6-7:30 p.m. |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                |                                                                                                                                                                                                                                                                                                                                                 |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| September 2-11 | Late Registration/Amherst<br><i>\$10 Registration Fee</i><br>All Academic Extension Offerings<br>Undergraduate UMass/Amherst Courses<br>(space-available basis only - written permission required)<br>Location: Hills House Main Lobby, UMass/Amherst<br>Time: Monday-Thursday 9 a.m.-7 p.m.<br>Friday 9 a.m.-5 p.m.<br>Saturday 10 a.m.-1 p.m. |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## \*REFUND SCHEDULE

|                   |           |
|-------------------|-----------|
| Sept. 3-Sept. 16  | 80%       |
| Sept. 17-Sept. 23 | 60%       |
| Sept. 24-Sept. 30 | 40%       |
| Oct. 1-Oct. 7     | 20%       |
| After Oct. 7      | NO REFUND |



## REGISTRATION AND RECORDS

### Admissions

Any person who has graduated from high school or who has a certificate of General Educational Development is entitled to enroll in undergraduate courses offered by the Division of Continuing Education at the University of Massachusetts at Amherst. The Division assumes that the student will accurately assess his or her ability to take a college level course. It is the student's responsibility to observe prerequisites for individual courses. Enrollment does not imply acceptance into a degree program.

In accordance with University policy, University of Massachusetts students under academic suspension or academic dismissal may not enroll in courses offered by the Division of Continuing Education.

### Mail Registration

1. To register by mail simply complete the registration form in this publication and mail with full remittance to:  
Academic Extension, AE76-3  
Division of Continuing Education  
P.O. Box 835  
Amherst, Massachusetts 01002
2. Make checks payable to **Continuing Education AE76-3**. All registrations must include total course fees plus a \$5 registration fee.
3. Deadline for mail registration is August 13 postmark.
4. Mail registrations will be confirmed by return mail late in August. Room assignments will be included in mail confirmation. Class sizes are limited, so register early.

### In-Person Registration

To register in person for Continuing Education courses in this catalog come to one of the following locations:

Hills House Main Lobby  
UMass/Amherst

*Wednesday-Saturday, August 18-21*

*10 a.m.-4 p.m. and 6-8 p.m. (Wednesday-Thursday)*

*10 a.m.-4 p.m. (Friday)*

*10 a.m.-2 p.m. (Saturday)*

Building B, Room 347  
Holyoke Community College  
Holyoke, Massachusetts  
*Tuesday, August 24*  
*9-11 a.m. and 5-7 p.m.*

### Registration, University Classes

Regular *undergraduate* University of Massachusetts classes are available to Continuing Education students on a space-available basis. Students must appear in person (August 18-21, Hills House Main Lobby, see page 5 for times) to register for undergraduate University classes with space available. There will be no exceptions to this policy. Students may *not* register for University classes prior to August 18, nor during the week of August 23.

Continuing Education students are normally limited to a total of nine credit hours of work per semester of which no more than six credit hours or two courses may be taken in regular University courses.\* See Overloads.

Effective Fall Semester 1975, the Division of Continuing Education no longer registers students in *graduate* University courses except for those graduate courses offered in Continuing Education's Academic Extension Program. Graduate School policy states that "admission to the Graduate School is to be prerequisite to enrollment in any UMass graduate course for credit or audit." Students wishing to register for graduate courses must complete a "Non-degree Student Application" form. Applications are available from the Graduate Admissions Office, Graduate Research Center, University of Massachusetts, Amherst, MA 01002. Registration for these courses will take place September 1, 1976, at Boyden Gymnasium, 9 a.m.-12 noon and 1:30-4:30 p.m. For further information concerning application and registration in graduate University courses, call the Graduate School at 545-0024.

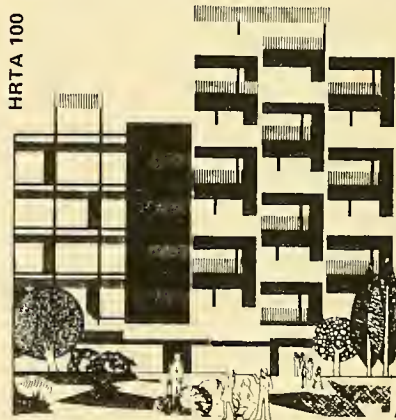
\*"Regular University courses" means undergraduate courses not specifically taught through the Division of Continuing Education but available to Continuing Education students on a limited, space-available basis.

### Records and Registration Office Hours

|                           |                      |
|---------------------------|----------------------|
| Monday-Thursday           | 8:30 a.m.-7:00 p.m.  |
| Friday                    | 8:30 a.m.-5:00 p.m.  |
| Saturday                  | 10:00 a.m.-1:00 p.m. |
| (Closed holiday weekends) |                      |
| Phone: 545-3653           |                      |

### Change of Program

Students must formally notify the Division of Continuing Education, *in writing*, of all Adds, Drops, and Withdrawals. Changing from one section to another of the same course is considered to be an Add and a Drop. Failure to use proper procedure could result in an "F" being recorded as a final grade. Students dropping courses during the Refund Period will receive refunds only if proper procedures are followed. Please check the Academic Extension Calendar for Add, Drop, and Withdrawal Periods, as well as the Refund Schedule.



HRTA 100, as the department's introductory course, is open to all students who are interested in a career in the hospitality industry or who are simply interested in the scope, content and shape of the industry. A required project takes students to a restaurant, hotel, motel, or tourist destination. HRTA 100 is taught by Prof. S.W. Fletcher, head of the department.

**Hotel,  
Restaurant  
and Travel  
Administration**

## Transcripts

Permanent records of all courses taken through the Division of Continuing Education are maintained by the Division, and are *not transferred automatically* to other offices on campus, such as the Registrar's Office or the Graduate Records Office. Requests for transcripts must be made in writing either by letter or by official Transcript Request Card. Be sure to include the complete address of the person or institution to whom the transcripts will be sent.

*Official transcripts* will be sent only to Registrars or Recording Officers of institutions and to recognized business addresses. *Student copies*, so designated, may be obtained by following the same procedure. The first transcript will be issued free of charge. There will be a \$1 charge for all subsequent transcripts.

Address transcript requests to:

Transcript Request  
Division of Continuing Education  
Hills House North  
University of Massachusetts  
Amherst, Massachusetts 01002

## Cancellations

Continuing Education courses are funded solely by student fees. In the event that instructional costs cannot be met, any course may be cancelled at the discretion of the Division. Students who are affected by a course cancellation will be notified by mail. Students not wishing to enroll in an alternative course will receive a full refund.

In the event of severe weather conditions or other emergencies, it may be necessary to cancel classes. Usually, when University day classes are cancelled, evening classes are also cancelled. Announcements will be made over the following radio stations:

Amherst—WTTT, WFCR, WMUA  
Greenfield—WHA1  
Hartford—WTIC  
Northampton—WHMP  
Orange—WCAT  
Springfield—WHYN, WACE, WSPR  
Ware—WARE  
Worcester—WTAG

The Division reserves the right to cancel, add, or combine sections of courses listed in this publication or to change instructors as necessary.

## Degrees

The Division of Continuing Education offers part-time study which may lead to any undergraduate degree currently offered by the University of Massachusetts. The Bachelor of General Studies Degree, also conferred by the University of Massachusetts, is a degree unique to the Division of Continuing Education. See BGS, page 3.

## Matriculation Policy

The Division of Continuing Education has an open admissions policy requiring only a high school diploma, or its equivalent, for enrollment in undergraduate courses. Matriculation, or acceptance as a degree candidate, however, is based on a satisfactory performance (grade point average of 2.0 or better) in a specified number of University of Massachusetts courses, and declaration of a program of study.

Students not planning to transfer into the University's full-time program and who anticipate receiving a baccalaureate degree through the Division of Continuing Education should apply for matriculated status as soon as they have completed the appropriate number of credits (see below).

Application for matriculated status at the earliest possible stage will allow the Division to do a better job of helping the student in the planning of his or her program of study, as well as promote a greater awareness within the Division of what courses should be offered both on and off campus to meet student needs.

| Number of UMass/CE Credits<br>Needed to Apply for<br>Matriculated Status |    |
|--------------------------------------------------------------------------|----|
| Number of Transfer Credits                                               |    |
| 60 or more                                                               | 15 |
| 48-59                                                                    | 18 |
| 36-47                                                                    | 21 |
| 24-35                                                                    | 24 |
| 12-23                                                                    | 27 |
| 0-11                                                                     | 30 |

Further information and an application may be obtained from the Records Office of the Division of Continuing Education, located in the lobby of Hills House, telephone (413) 545-3653.

## Core Requirements

The University of Massachusetts core is a block of at least 33 credits within the specified 120 credits needed for graduation. Students must complete core requirements by taking certain specified courses in several fields of learning. An introduction to the humanities and fine arts, for instance, may be fulfilled by the successful completion of three courses chosen from those identified by the letter "C" after the course title. These 33 credits of introductory courses are distributed as follows.

- B Core: 6 credits in written and spoken English, usually offered by the Rhetoric Department. These courses are identified by the letter "B".
- C Core: 9 credits in humanities or fine arts, generally from the departments of Afro-American Studies, Art, Classics, Comparative Literature, English, History, Linguistics, Music, Philosophy and designated foreign literature courses. These are identified by the letter "C".
- D Core: 9 credits in social or behavioral sciences, generally from the departments of Afro-American Studies, Anthropology, Economics, Government, Political Science, Psychology, and Sociology. These are

## CREDIT/DEGREES

### Credit

Credit offered through the Division of Continuing Education is resident University of Massachusetts credit and is fully transferable. Credit courses numbered 500 and above are graduate level. Some double numbered courses, such as COMSTU 225/525, may be taken for either undergraduate or graduate credit. It is important that students indicate only one of these numbers—the one corresponding to the level of credit desired.



identified by the letter "D".

E Core: 9 credits in mathematics or natural sciences, generally from the departments of Astronomy, Botany, Chemistry, Mathematics, Physics, Statistics, and Zoology. These are identified by the letter "E".

Courses in this catalog which may be applied toward the completion of University core requirements are designated by a capital letter, in parentheses, following course titles as they appear in the Academic Extension course descriptions.

## Overloads

Continuing Education students are normally limited to a total of nine credit hours of work per semester of which no more than six credit hours or two courses may be regular University courses.

Students desiring to take more than a total of nine credit hours, of which no more than six are regular University courses, should complete a Petition for Credit Overload. These forms are available in the Continuing Education Records Office in the lobby of Hills House. Petitions must be accompanied by transcripts of previous college work and/or supporting letter(s) from appropriate advisor(s).

Permission for more than six credit hours or two regular University courses will be considered in the following situations only: 1) if a student has a job which requires working full time at night; or 2) if a student is matriculated through Continuing Education and needs a specific course which is not offered at night. Petitions for this purpose may be obtained from any member of the Division's counseling staff. **No more than a total of nine credit hours or three regular University courses will be approved in any case.**

## Credit Options

### Individualized Study

Individualized study is designed to provide an opportunity for Continuing Education students to fulfill credit requirements by working on an individual basis with an instructor.

Individualized study contracts may be undertaken in a special problems area, or for approved University courses.

Students may register at any time for individualized study by completing an Individualized Study Contract, available from the Division of Continuing Education, and by obtaining the necessary signatures. In each case, the program of study should be formulated by mutual agreement between the faculty member and the student. Such courses of study must be completed within one calendar year of the registration date or an incomplete will be recorded and computed as a 0.0 in the student's cumulative average. An individualized study fee of \$5 is charged for each registration in addition to the standard per credit fee of \$35.

Information for individualized study may be obtained from the Coordinator of Individualized Study Programs, 545-3430.

### Auditing

Students may choose to audit a course and have that audit recorded on the permanent record as an "AUD" provided that: 1) the student officially registers and pays all course fees; 2) the student officially elects the class as an audit (all requests must be submitted to the Continuing Education Records Office by the end of the Add/Drop Period, Sept. 11, 1976); 3) the student satisfies the instructor regarding his or her preparation and motivation for auditing the class; 4) the student satisfies all the criteria for

a successful audit as stipulated in advance by the instructor.

## College Level Examination Program (CLEP)

CLEP is a national program of credit-by-examination that offers the opportunity to obtain recognition for college-level achievement, no matter when, where, or how learning has been acquired—by means of formal or informal study. If the results are acceptable, college credit is given, applicable toward an undergraduate degree.

CLEP general exams are available in the areas of English Composition, Humanities, Social Studies, History, Natural Sciences, and Mathematics. There are over 30 subject exams in a wide variety of fields. All exams are given monthly on the University of Massachusetts/Amherst campus. Test fees are \$20 for one General or one Subject Exam; \$30 for two; and \$40 for any combination of three to five.

Further information and registration forms may be obtained from the Division of Continuing Education, 545-3430, or the Student Development Center, Berkshire House, 545-0333. In order to have the test scores sent directly to the Division of Continuing Education, place the number "3945" in the Score Report College Code box on the CLEP registration form.

### Pass/Fail Option, Continuing Education

Continuing Education students are eligible to use a pass/fail option in one course each semester. The student may elect to take up to and including five University core requirement courses on a pass/fail basis. In a course in which a student chooses the pass/fail option, the instructor will not be informed

# The Earth Is



# Your Home

Learn to identify the gross structure and composition of the earth; rock-forming minerals and the three classes of rocks; economically important ore; and decorative semi-precious and precious stones. *Geology 191, Introduction to Rocks and Minerals*, provides laboratory work using minerals from the University collection and also from the personal collection of the instructor, Professor Albert B. Nelson. This course, presented in cooperation with the Department of Geology and Geography, will be given for three credits on Monday evenings.

Make It Your Hobby Too



that the course is being taken pass/fail. At the end of the semester the instructor will turn in the letter grade earned. At this time, if a grade of A through D has been reported, the Records Office will record either a "P" or the letter grade on the student's permanent record, whichever is more beneficial to the cumulative average of the student. **All requests to employ the Pass/Fail Option must be filed with the Continuing Education Records Office prior to the end of the Add/Drop Period (September 11, 1976).**

#### Pass/Fail Policy, School of Education

The majority of courses given under the supervision of the School of Education, both graduate and undergraduate, are graded on a pass/fail basis only. This is not optional on the part of the student except in the following special case. Master's degree students enrolled at the University of Massachusetts are required by Graduate School policy to earn 18 graded credits during their 33-hour Master's program. A student eligible to receive a letter grade should make the request known to the instructor early in the semester so that the grade may be added to the roster at the end of the course.

Please do not request exceptions to the pass/fail policy. The School of Education understands that there may be a number of institutions which simply do not accept the pass/fail mark. In these cases, the student should contact the instructor and request a letter which states that the School of Education is on a pass/fail basis but indicates what the grade would have been if the student had been taking the course for a grade.

If further information is desired regarding the School of Education pass/fail policy, call or write Mike Schwartz, 125B Education Building, University of Massachusetts, Amherst, Massachusetts 01002, phone 545-2701.

## EXPENSES

Course fee for each three credit course is \$105. Massachusetts residency does *not* affect the course fee. Any other course fees are as stated in the course description or in the Schedule of Courses.

#### Course Fee

The following fees are not refundable except for officially cancelled courses. Explanations of optional fees are in the section following.

|                                                                                                      |         |
|------------------------------------------------------------------------------------------------------|---------|
| <b>Registration Fee</b> (charged once per semester)                                                  | \$ 5    |
| Required of all students                                                                             |         |
| <b>Late Registration Fee</b>                                                                         | \$10    |
| Required of all students registering after September 1                                               |         |
| <b>Laboratory Fee</b> (a limited number of courses)                                                  |         |
| Assessed <i>after</i> beginning of semester. Fee varies and is indicated in the Schedule of Courses. |         |
| <b>Change of Program Fee</b>                                                                         | \$ 2    |
| Charged for each change recorded                                                                     |         |
| <b>Commencement Fee*</b>                                                                             | \$10    |
| Assessed during semester of graduation                                                               |         |
| <b>Optional Fees</b>                                                                                 |         |
| Arts Council Fine Arts Fee                                                                           | \$ 3    |
| Health Services Fee                                                                                  | \$46    |
| Health Insurance Fee                                                                                 | \$56.50 |
| Available only with Health Services Fee                                                              |         |
| Physical Education Fee                                                                               | \$ 5    |
| Paid at Ticket Office, Boyden Gym                                                                    |         |
| Picture Identification Fee                                                                           | \$ 1    |

\*Students planning to receive a baccalaureate degree through the Division of Continuing Education at the end of fall semester 1976, or spring semester 1977, should notify the Director of Student Services of their intent by completing an Intent to Graduate form, available in the Records Office of the Division of Continuing Education, in the lobby of Hills House. A \$10 commencement fee is required, payable at the time the Intent to Graduate form is filed.

## Refunds

Refunds of course fees will be made according to the following schedule, with two exceptions: 1) a student involuntarily called to military service before the completion of a course will be given a pro rata refund of course fee; 2) students enrolled in courses which are cancelled due to lack of enrollment will be given a full refund. Refunds for course drops received through the mail will be computed according to the date of postmark.

#### Refund Schedule

|                 |           |
|-----------------|-----------|
| September 3-16  | 80%       |
| September 17-23 | 60%       |
| September 24-30 | 40%       |
| October 1-7     | 20%       |
| After October 7 | NO REFUND |

## Explanation of Optional Fees

The Division is pleased to be able to make available the following University services and programs for Continuing Education students. These programs and services are optional. Payment instructions for each are listed below.

#### Fine Arts Fee

Each year the Arts Council brings to the Amherst campus some of the world's most renowned performing artists. Artists who will be performing during the 1976-77 season include: Chicago Symphony, Leontyne Price, PDQ Bach, Royal Winnipeg Ballet, Count Basie, Boston Symphony, Alwin Nickolaï Dance Co., Dave Brubeck, and Julian Bream. Payment of the Arts Council fee allows students to purchase tickets with a 50% discount.

#### Health Services Fee

University Health Services staff are responsible for the direct provision of a wide range of integrated services. Primary care physicians serve as family doctors and coordinate the nature and extent of services to assure quality care, whether it is provided in the Health Center or under the supplementary insurance program. Laboratory, x-ray, physical therapy, pharmacy, specialty clinics, inpatient facilities, and other services are also available at the Health Center.

The student health program also provides mental health consultation, including short-term and group psychotherapy, a dental program, health education activities in such areas as drug use, nutrition, common health ailments and human sexuality, and an environmental health and safety monitoring unit.

The Health services fee is \$46 for fall semester only (effective date: September 1, 1976) and is payable to the Division at the time of registration. **Students must enroll for at least six credits to be eligible.**

#### Health Insurance Fee

The Chicago Insurance Company offers University of Mass-

achusetts students a hospital, surgical, and medical program to supplement the on-campus care provided by University Health Services. This insurance provides protection from September 1, 1976 to August 31, 1977 for specific medical expenses due to injury or emergency illness which causes loss that commences while the policy is in force, including university holidays, summer vacation, and other times when the student is away during the insured period.

This insurance plan offers liberal benefits for services provided by participating physicians and hospitals. The Cooley Dickinson Hospital and groups of general and orthopedic surgeons have entered into an agreement with University Health Services to provide high quality services at no additional cost to the subscriber. Emergency treatment and *authorized* specialist services in a non-participating hospital and by a non-participating physician, however, are covered to \$5,000 per occurrence. The insurance brochure is available from the Division of Continuing Education or University Health Services.

**Note:** Services obtained outside the University Health Center must be authorized in advance by a physician participating in the health plan in order to receive coverage from this insurance.

The cost for September 1, 1976-August 31, 1977, is \$56.50. Students must pay the Health Services fee of \$46 in order to purchase the insurance, the fee for which is payable to Continuing Education at the time of registration. Health insurance for the above period is available only to students who are registering for the 1976-77 academic year.

#### Dependents Health Services Fee

Students who pay a Health Services fee are eligible to enroll their dependents (spouse and/or children) in the Health Services Program. The payment of this fee will allow the student's dependents to receive the same comprehensive health services presently available to students at the University Health Center. Interested persons should contact the Business Office of the University Health Center.

#### Physical Education Fee

Continuing Education students may pay a \$5 physical education fee, which entitles them to use facilities such as pools, bowling alleys, or gyms, and equipment if it is available. A locker or basket may be obtained on a space-available basis. All services and facilities are regulated by the School of Physical Education, and Continuing Education students are expected to conform to established policies.

Payment should be made to the Ticket Office in Boyden Gymnasium, and the receipt taken to the Intramural Office where an I.D. card will be issued.

#### Picture Identification Cards

Picture I.D. cards will be available to all Continuing Education students at a cost of \$1. These cards are not mandatory for all students, but are essential when charging books out of the University Library. A picture I.D. card also provides handy identification when on campus and allows the student to cash checks (\$25 maximum) at the Student Union.

All students wishing to obtain a picture I.D. card must go to the Continuing Education Records Office, Hills House Front Lobby, to obtain a receipt of \$1 payment and a verification of student number. Students will need a second form of identification when the picture is taken. Finished cards may be picked up in 24 hours at the Continuing Education Records Office.

The cards will be validated each semester.

Students who already have a Continuing Education picture I.D. card from a previous semester may obtain a validation sticker for the fall semester at the Records Office once fall registration has been completed.

I.D. Office staff members will be available to take pictures for Continuing Education students during the following days and hours:

#### *In-Person Registration/Hills House Main Lobby*

August 18-20

Wednesday-Thursday, 10 a.m.-4 p.m. & 6-8 p.m.

Friday, 10 a.m.-4 p.m.

Saturday, 10 a.m.-2 p.m.

#### *Prior to the first day of classes/169 Whitmore*

August 23-27

Monday-Friday, 9 a.m.-4 p.m.

#### *After classes start/169 Whitmore*

October 1 and thereafter

Monday-Friday, 9 a.m.-4 p.m.

**Continuing Education students are urged to make every effort to obtain picture I.D. cards during the hours specifically set for them.**

#### Parking Costs

##### Amherst

Any student who registers for a class held on campus between the hours of 7 a.m. and 6 p.m., and who plans to park a vehicle on the Amherst campus, must either obtain a parking decal from the University Parking Office, Room 1, Munson Hall, park in the Campus Center Parking Garage, on a fee-per-hour basis, or use metered space. The rates and privileges for parking are determined by the University. Access to parking lots is not restricted after 6 p.m., or on weekends, and no fees are collected for vehicles which are parked during those times only.

##### Holyoke

Campus parking requires a parking permit, applications for which may be obtained at in-person registration. Those who are registering by mail may request a parking permit application and it will be sent by return mail. The parking application may be taken to the Security Office, Building E, HCC, and a permit will be issued at no charge.

#### Textbooks

##### Amherst

The Textbook Annex of the University of Massachusetts stocks books for Continuing Education courses and has extended its hours for the convenience of Continuing Education students. The Annex is arranged alphabetically by department and numerically from the lowest course number to the highest course number within the department. Information on books will be posted in the Annex. Blue counter cards signify Continuing Education courses.

The University Store and Textbook Annex hours for fall are listed below.

|        |         | Store               | Annex         |
|--------|---------|---------------------|---------------|
| Mon.   | Aug. 30 | 8:30 a.m.-4:30 p.m. | 9 a.m.-4 p.m. |
| Tues.  | Aug. 31 | 8:30 a.m.-4:30 p.m. | 9 a.m.-4 p.m. |
| Wed.   | Sept. 1 | 9 a.m.-5 p.m.       | 9 a.m.-5 p.m. |
| Thurs. | Sept. 2 | 9 a.m.-9 p.m.       | 9 a.m.-9 p.m. |
| Fri.   | Sept. 3 | 9 a.m.-5 p.m.       | 9 a.m.-5 p.m. |
| Sat.   | Sept. 4 | Closed              | Closed        |
| Sun.   | Sept. 5 | Closed              | Closed        |



|        |          |                |                |
|--------|----------|----------------|----------------|
| Mon.   | Sept. 6  | Closed         | Closed         |
| Tues.  | Sept. 7  | 9 a.m.-9 p.m.  | 9 a.m.-9 p.m.  |
| Wed.   | Sept. 8  | 9 a.m.-5 p.m.  | 9 a.m.-9 p.m.  |
| Thurs. | Sept. 9  | 9 a.m.-5 p.m.  | 9 a.m.-7 p.m.  |
| Fri.   | Sept. 10 | 9 a.m.-5 p.m.  | 9 a.m.-5 p.m.  |
| Sat.   | Sept. 11 | 11 a.m.-3 p.m. | 11 a.m.-3 p.m. |
| Sun.   | Sept. 12 | Closed         | Closed         |

From Monday, September 13, and throughout the semester, hours are as follows:

|               |                |                     |
|---------------|----------------|---------------------|
| Monday-Friday | 9 a.m.-5 p.m.  | 8:30 a.m.-4:30 p.m. |
| Saturdays     | 11 a.m.-3 p.m. | Closed              |

Continuing Education students are urged to make every effort to purchase books during the hours specifically set for them. Refer to the campus map in this catalog for directions to the Annex.

### Holyoke

Textbooks are available at the HCC Bookstore. In addition, students have complete access to the college library upon presentation of a current University of Massachusetts Continuing Education Identification Card.

## STUDENT SERVICES

### Orientation for CE Students

Wednesday, September 1, 1976

7:30 p.m., Hills House Lobby

Student orientation is designed to provide an opportunity for Continuing Education students to acquaint themselves with the Division's programs, degree options, policies, and people. A slide presentation will be shown at 7:30, followed by small group discussions which will allow each student to have questions answered in a personal manner. Orientation presents a chance to meet some of the staff of the Division, as well as fellow students, people who will be important in helping to make the coming semester a good one. Coffee and tea will be served.

### Counseling Services

The counseling staff of Student Services is available to aid students in planning their educational and/or vocational goals. A counselor will be available in Amherst Monday-Thursday, 9 a.m.-7 p.m., Friday, 9 a.m.-5 p.m.; and on Saturday by appointment.

#### General Counseling Staff

Joan P. Eignor  
Director of Student Services  
100A Hills House North  
(413) 545-3430

Harry Neunder  
103 Hills House North  
(413) 545-3430

Garrett J. McAuliffe  
101 Hills House North  
(413) 545-3430

#### Receptionist

Carolyn Cauty  
100 Hills House North  
(413) 545-3430

Although an appointment is not necessary, it will help us if we know you are planning to come.

### Off-Campus Counseling

Continuing Education students and others who may be interested in receiving academic counseling off campus may meet with Harry Neunder of the Student Services staff at Holyoke Community College, 12-1 p.m., on alternate Wednesdays: September 8 and 22, October 6 and 20, November 3 and 17, and December 1 and 15. Call 545-3430 for appointments and for the specific room location at Holyoke Community College.

### Financial Assistance

#### University Financial Aid

Continuing Education students carrying six credits or more and working on a degree or certificate are eligible to be considered for financial aid. Assistance will be awarded on the basis of need and merit and will cover only direct educational expenses. Eligible students may receive aid in the form of National Direct Student Loans, Basic Educational Opportunity Grants (B.E.O.G.), and/or University Scholarships.

Students who wish to apply should:

1. Complete the Basic Educational Opportunity Grant form and submit it to the designated address for evaluation. All students who have not completed a first bachelor's degree must submit this form. The BEOG form takes four to six weeks to process, so plan accordingly.

(Continued on next page)

### HIST 186 C CORE

# LIZZIE!

*Lizzie Borden took an axe,  
And gave her mother forty whacks.  
When she saw what she had done,  
She gave her father forty-one!*

On the hottest day of the summer of 1892, Lizzie Borden of Fall River, Massachusetts, hacked her father and mother to death with an axe. This brutal incident is the focus of an entire semester's work.

What drove Miss Lizzie to do it? The search for the answer leads deeper and deeper into the inner life of the Borden family, into the history of Fall River, and ultimately into the most basic questions of class structure and sexual politics in the Gilded Age. History 186, *New Approaches: Lizzie Borden*, gives students the opportunity to pose and answer questions through careful and intensive reading in a wide variety of primary sources.



History 186 is offered in cooperation with the History Department of the University of Massachusetts/Amherst for three credits on Thursday evenings.



*(Financial Aid, continued)*

2. Pick up a Financial Aid Application for Continuing Education Students from the Division of Continuing Education, Hills House North, or from the University Financial Aid Office in Whitmore Administration Building.
3. **Completed applications**, with B.E.O.G. eligibility report attached (when applicable), should be returned to the Continuing Education Records Office in the lobby of Hills House North no later than August 23, 1976. A \$4 processing fee for computing the financial statement will be charged of all applicants. This fee is non-refundable and is payable to Continuing Education, XE-121, at the time of application.
4. **To avoid delays in processing, have you...**
  - a. computed your budget on a 4-month basis?
  - b. checked your arithmetic?
  - c. completed the entire form?
  - d. paid your \$4 processing fee?

Awards will be made by the fourth week of the semester, but there is a six to eight week waiting period for receipt of processed checks. **It is the student's responsibility to make arrangements for maintenance costs in the interim. Please plan accordingly.**

#### Law Enforcement Education Program (LEEP)

In-service police officers, courts officers, and corrections officers may qualify for grants under the provisions of LEEP. Application forms, which must be submitted each semester, are available from Harry Neunder, 103 Hills House North, or from any member of the Student Services staff, (413) 545-3430. Completed forms must be returned to Mr. Neunder no later than Friday, September 10, 1976.

#### Veterans Benefits

All courses offered for credit through the Division of Continuing Education are approved by the Veteran's Ad-

ministration, and veterans can therefore apply for educational benefits. It is the student's responsibility to contact the Veterans Affairs Office, 236 Whitmore Administration Building, (413) 545-1346, to obtain necessary forms and instructions for completing them. There is no deadline to file for benefits, but the veteran should bear in mind that processing forms requires approximately eight weeks.

The Veterans Affairs Office offers many other programs and services which are available to Continuing Education students who are veterans. For information about benefits and services, Continuing Education veterans may talk with a student advisor from the Veterans Affairs Office on Tuesday and Thursday evenings, 5-7 p.m., Room 100, Hills North.

.....  
 • A representative from the UMass Financial Aid  
 • Office will be in Hills House Lobby at the following time  
 • to answer any questions about receiving financial aid.  
 • *August 18, 10 a.m.-4 p.m.*  
 • .....

## IMPORTANT COURSE DESCRIPTION INFORMATION

At the time this catalog was prepared, instructors for academic extension courses had not been selected.

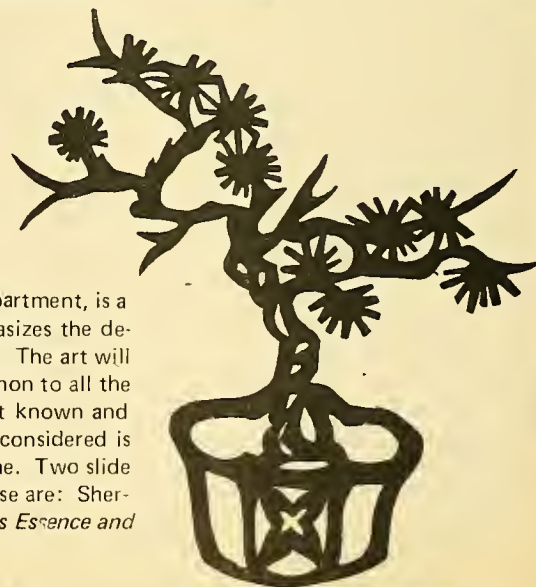
Course descriptions which follow are those which appear in the University of Massachusetts' Course Directory, or which have been approved by the academic departments for inclusion in this catalog. For more complete course information, the student may visit either a Continuing Education academic counselor or the staff in the Center for Academic Extension, both located in Hills House North.

The Division of Continuing Education reserves the right to cancel, add or combine sections of courses listed in this publication, or to change instructors as necessary.

# Buddhist Art

## Visual Arts of Asia

*Visual Arts of Asia*, presented in cooperation with the Umass Art Department, is a historical survey of the Buddhist Tradition of art in Asia. It emphasizes the development of Buddhist art in India, Southeast Asia, China and Japan. The art will be treated as a manifestation of the growth of religious practices common to all the regions, yet having characteristics peculiar to each region. The best known and most typical monuments, paintings and sculpture are studied. Also considered is the relation of the art to the communities from which art objects come. Two slide exams and two papers determine the course grade. Texts for the course are: Sherman Lee, *A History of Far Eastern Art*; Edward Conze, *Buddhism, Its Essence and Development*; University Prints, *Buddhist Art*.



## ACADEMIC EXTENSION COURSES

### ACCOUNTING

#### Introduction to Financial Accounting

##### ACCTG 120

Introduction to principles underlying the preparation of financial statements.

#### Introduction to Managerial Accounting

##### ACCTG 130

Continuation of Accounting 120 with major emphasis on the development and application of accounting data for planning and control.

### ANIMAL SCIENCE

#### Horse Breeds, Types and Selection

##### AN SCI 386A

The history and development of breeds and their present-day type, conformation and use. Anatomy and conformation and the relationship of form to function. Organized and systematic approach to selection.

### ANTHROPOLOGY

#### Introduction to Physical Anthropology

##### ANTH 103

Human evolution, human variation, racial classifications, racism, and modern theories of variation.

#### Introduction to Cultural Anthropology (D)

##### ANTH 104

Social and cultural anthropology dealing with variations among societies in technology and economics, social and political organization, art, religion and ideology.

#### Man and the Horse

##### ANTH 290Z

Interdisciplinary study of the role of the horse from the archaeological past to the ethnographic present. Significance of genetic mechanisms and evolutionary processes in the development of the man-horse relationship; behavior and social organization of horses observed in the wild, and the changes which have come about through domestication; examination of the man-horse relationship in the contexts of different cultural systems.

### ART

#### Basic Drawing (C)

##### ART 100

Drawing in black and white, applying pencil, crayon, charcoal techniques to representation in line and tone, emphasizing sound observation and effective presentation. Six studio hours.

#### Introduction to the Visual Arts (C)

##### ART 117

Diverse media of the visual arts from a topical rather than a strictly historical viewpoint. Fundamental techniques of formal and stylistic analysis; surveys a wide range of topics in the context of the relation of art objects to their cultures, creators, critics and public.

#### Basic Design I (C)

##### ART 120

Two-dimensional design concepts arising out of work with specific problems in a variety of media. Six studio hours.

#### Visual Arts of Asia

##### ART 190C

Introduction to Art History focusing on Asian, rather than Western arts. Visual arts associated with Buddhism, tracing the imagery of Buddhism as it develops in India and as it is spread and transformed through the cultures of central Asia, China and Japan, and southeast Asia and Indonesia. See ad, page 12.

#### Printmaking: Relief I (C)

##### ART 240

Basic study of material, technique, and aesthetic considerations peculiar to relief. Students print their work. Prerequisites: Art 100, 120 or permission of the instructor. Six studio hours.

#### Printmaking: Intaglio I (C)

##### ART 242

Basic study of materials, techniques, and aesthetic considerations peculiar to etching, engraving, and aquatint. Students print their work. Prerequisites: Art 100, 120 or permission of the instructor. Six studio hours.

#### Sculpture I (C)

##### ART 260

Experimentation with materials. Investigation of the nature of three-dimensional form. Development of three-dimensional order. Individual projects. Prerequisites: Art 100, 122. Six studio hours.

### ASTRONOMY

#### Exploring the Universe (E)

##### ASTRON 100

The earth, its structure and age, the moon, the sun, other planets and the origin of the solar system. Stars and galaxies, their birth and death. The universe, its structure and evolution. Supplemented by occasional hours of evening observation. Not open to physical science or engineering majors.

### BACHELOR OF GENERAL STUDIES

#### Women in Society: An Interdisciplinary Approach

##### BGS 100A

Introduction to "women's place" in the society from sociological, psychological, economic, educational, religious and political perspectives. Study of past, present, and future aspects of these six broad disciplines helps provide a general understanding of the complexities women face in the U.S. today.

#### Women and the Life-Career Process (Back To School—Into The Job Market) BGS 100B

Life planning and career development, with occupational,



not political base, specifically for women entering or returning to higher education and/or world of paid work. Women's self-development, changing social positions, roles in work both inside and outside the home, and needs for continuing education. Professionally planned personal development process.

**Occupational Safety and Health Management (Holyoke)**  
**BGS 201**

Recognition, evaluation and elimination of Occupational Safety and Health hazards through the application of program management. Recent Occupational Safety and Health legislation (OSHA) with focus on the potential hazards in the occupational environment, the effects of excessive exposure and basic types of hazard control mechanisms.

**BOTANY**

**General Botany (E)**  
**BOTANY 101**

An introduction to basic biological principles of organization, development and evolution, using botanical illustrations. Foundations and approach in biological research, and the consequence of this research on human thought and experience. Not open to science majors without permission of major departments. Not to be taken serially with Botany 100.

**BUSINESS ADMINISTRATION**

**Introduction to Computers for Business**  
**BA 110**

BASIC and FORTRAN computer programming languages, with emphasis on the use of the computer for business data processing and problem solving.

**COMMUNICATION STUDIES**

**Introduction to Mass Communications (D)**  
**COMSTU 121**

History and development, structure, roles and functions. Standards for evaluation of the mass media.

**Interpersonal Communication (C)**  
**COMSTU 210**

Nature and effects of person-to-person speech communication. Emphasis on the behaviors of everyday verbal and non-verbal communication that produce effects on ourselves, others, society and future communication. The relationship of interpersonal to public communication.

**COMPUTER AND INFORMATION SCIENCE**

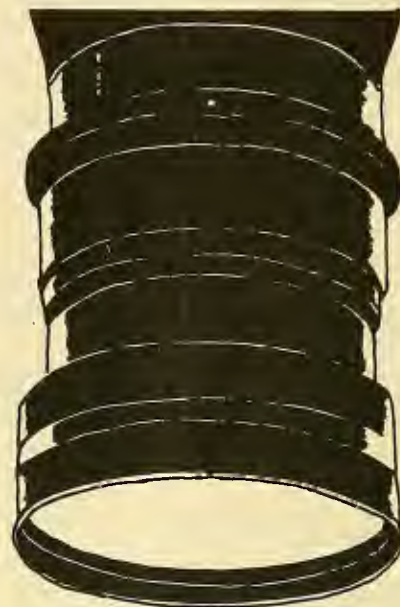
**Introduction to Problem Solving Using the Computer (E)**  
**COINS 122**

Problem solving and FORTRAN programming for students from all disciplines. Concepts associated with problem solving valid for many types of problems. Use of FORTRAN on the UMass time-sharing system. Laboratory included. Credit: 4. Course Fee: \$140.

**Assembly Language Programming**  
**COINS 201**

Basic ideas of computer hardware and principles of computer systems organization: input/output equipment, machine organization, logical design, elementary data structures, and assembly language programming. Lab involves hands-on experience with programs, loaders, and assemblers. Prerequisite: COINS 122 or programming experience. Credit: 4. Course Fee: \$140.

HIST 140 C CORE



**European History**  
**1500-1875**  
**with FILM**

*This unusual history course, presented in cooperation with the History Department, UMass/Amherst, provides an introduction to European history during the period from 1500 to 1815, with a guide to learning through film. Each film screening will be followed by a discussion evaluating the film's strengths and weaknesses as an aid to understanding the period presented.*

*The course deals with the period in European history prior to the Industrial Revolution: the era spanning the cultural Renaissance, the religious change of the Reformation, the crises of the seventeenth century, the expansion of European power into the rest of the world, the Enlightenment and the first truly modern revolution.*

*Films under consideration for the course include: "The Titan" (Michelangelo), "Here I Stand" (Martin Luther), "Cromwell" (English Revolution), "Blaise Pascal" (Scientific Revolution), "Farrebique" (French rural life), "The Last King of America—George III" (CBS production), "Tale of Two Cities" (Paris and London during the French Revolution, from the novel by Charles Dickens).*

*History 140 will be offered for three credits on Thursday evenings.*



## ECONOMICS

### Introduction to Microeconomics (D) ECON 103

Introductory analysis of resource allocation and income distribution through microeconomic theory. Specific problems illustrate the use of the theoretical precepts developed.

### Introduction to Macroeconomics (D) ECON 104

Introduction to the economic theory used to explain the behavior of the American economy. Macroeconomic goals of full employment, price stability, economic growth and balance of payments equilibrium.

### Economics and Urban Problems (D) ECON 181

Structure of the urban economy; goals, processes, problems, and policy in urban economic development.

## EDUCATION

### Photography I EDUC 290A

Intense workshop experience in photography. Lecture and lab (darkroom) scheduled for each class meeting. History of photography. Criticism of photography and visual literacy. Students complete all reading assignments and produce a portfolio to complete the course. Additional lab times scheduled outside of the regular class time.

### Innovative Approaches to Adult Education EDUC 290B/590B

Approaches to adult education in terms of planned efforts toward behavioral change in broad non-traditional perspective. Though the emphasis is on the adult audience in rural societies of the Third World, the principles could be applied to developed countries.

### Dramatizing the Curriculum EDUC 290C

Introduces a variety of dramatic techniques such as storytelling, dramatic action, mime, movement and narrative, which can be used to elicit different perspectives on literature and social studies. Discusses and makes use of tape recordings and videotape. Course assignments include selected readings, background research for dramatic projects and script writing.

### Human Crisis: Interventions for Helpers EDUC 290D

Crises in the human experience, such as drug, social and psychological, and practical techniques and skills for effectively dealing with these crises. Personal helping style and attitudes related to crisis and crisis intervention; counseling skills, crisis intervention theory and techniques, community referrals and resources.

### Nutrition, Learning and Behavior EDUC-D 390A/690A

Broad theoretical basis of the science of human nutrition and application of the current research work in the biomedical sciences: nutrition, molecular biology, human genetics and behavioral toxicology.

### Decision-Making Processes EDUC-T 590E

Three practical processes for the purpose of improving decision-making skills. Application of techniques and discussion regarding participant's specific decision-making areas. Examples, given by the instructor, are primarily directed to educational administration at the middle and higher levels. Some review of relevant literature. For information call Dr. Margaret M. Metha, 549-1112, after 6 p.m.

### Practicum for School Guidance EDUC-H 701

Field experience under supervision. For students in final part of master's program. Prerequisites: Education 577, 910, and 911. Credit: 6. Course Fee: \$210.

## ENGL 262 C CORE

# the modern novel

*A Clockwork Orange*: Burgess  
*The Lime Twig*: Hawkes  
*The Magus*: Fowles  
*Watt*: Beckett  
*The Invisible Man*: Ellison  
*Catch-22*: Heller  
*A Garden of Earthly Delights*: Oates  
*Henderson the Rain King*: Bellow  
*Temple of the Golden Pavilion*: Mishima  
*Breakfast of Champions*: Vonnegut  
*Arigato*: Condon

Within the context of modernism and its conflicts, English 262, presented in cooperation with the English Department, UMass/Amherst, considers the novel during the period from 1930 to 1970. The influences of theme are studied as they effect realistic and experimental forms of the novel. Themes considered are: innocence (Burgess, Hawkes, Condon); knowledge (Fowles, Beckett); society (Ellison, Heller); nature (Oates, Bellow); and art (Vonnegut, Mishima).

**Seminar: The Role of the Elementary School Counselor**  
**EDUC-H 791C**

Development of the role and rationale for the elementary school counselor. The counselor's role as a change agent in the school environment. Themes and techniques for working with children.

**Seminar: Individual Intelligence Testing**  
**EDUC-H 791D**

Administer, score and interpret the Wechsler Adult Intelligence Scale, the Wechsler Intelligence Scale for Children and the Wechsler Preschool and Primary Scale of Intelligence. Tests administered in the field and complete protocols are submitted for evaluation.

**School Counseling Theory**  
**EDUC-H 910**

Counseling theory and research evaluation. Methodology, philosophies, ethics, problems, and issues of school counseling. Prerequisites: Education 577 and at least one hour of credit in Education 701.

## ENGLISH

**Reading Fiction (C)**  
**ENGL 152**

Introduction to themes and techniques of fiction through a reading of selected short stories and novels with emphasis on structure, style, point of view, and the like.

**The Modern Novel: 1930-1960 (C)**  
**ENGL 262**

Analysis of some 12 novels. A continuation of English 261, but may be elected independently. See ad, page 15.

**Creative Writing**  
**ENGL 341**

Intensive practice in writing prose fiction, poetry, and occasionally other forms, supplemented by discussion of ideas and techniques in contemporary literature.

## ENTOMOLOGY

**Insects and Man (E)**  
**ENT 126**

Survey of the field: structure, development, evolution, classification, biology, and natural control of insects. Formation of an insect collection.

## FOOD SCIENCE AND NUTRITION

**World Food Habits**  
**FS&N 102**

Historical origins, scientific bases, and nutritional implications of current human eating habits throughout the world. Physiological factors, specific taboos, superstitions, prejudices, aversions, cultural factors, influence of modern factors, influence of modern production technology, etc.

## FRENCH

**Elementary French I**  
**FRENCH 110**

For those with no previous creditable training in French. Intensive practice in four language skills.

**Elementary French II**  
**FRENCH 120**

A continuation of French 110. For those with no previous creditable training in French. Intensive practice in the four language skills.

## GENERAL BUSINESS AND FINANCE

**Corporation Finance**  
**GB FIN 201**

Corporate financial behavior; appraisal of factors affecting decision-making regarding sources and application of funds; introduction to capital budgeting and cost of capital problems. Prerequisite: Accounting 120 or permission of the instructor.

**Administrative Statistics**  
**GB FIN 250**

Probability and statistical distributions applied to business management problems; application of Bayes' theorem to sampling for business decision-making under uncertainty.

**Introduction to Law**  
**GB FIN 260**

Nature, functions and limits of law. Various theoretical approaches to law as an important institution in society. Selected problems of law, power and stratification and the relationship of law and values in society. Analysis of the administration of law through legislation, administrative agencies and courts.

## GEOLOGY

**Geology and Man (E) (Amherst & Holyoke)**  
**GEOL 105**

Evidence for selected mineral-forming processes; minerals in industry; developments in mineral research and technology; geologic considerations in such engineering works as mines, foundations, tunnels, waterways and airfields.

**Introduction to Rocks and Minerals (E)**  
**GEOL 191**

General survey of rock-forming minerals, the rock classes, common ore minerals, gem minerals, and semi-precious stones. Not for geology majors, but designed for foresters, landscape architects, archaeologists, botanists, wildlife and natural resources students, and those interested in natural history. See ad, page 6.

## HISTORY

**European History, 1500-1815, with Films (C)**  
**HIST 140**

Historical development of Western European thought and institutions. History majors are strongly urged to take this course before registering for advanced European courses. See ad, page 14.



### New Approaches to the Study of American History (C) HIST 186

Each semester is devoted to analysis of a single event, such as the Lizzie Borden murder case. Opportunity to pose and answer questions through careful and intensive reading in primary sources. See ad, page

### Civil War Era, 1860-1877 (C) HIST 320

How and why the Civil War came about; course and conduct of the war; and the efforts of politicians to put the country back together again. Crucial issues: destiny of white Southerners, fate of blacks, and survival of the nation. Discussion encouraged.

### The City in the Modern United States (C) HIST 337

The industrial city and the full-scale urbanization of the modern United States. Effect of city life on the social, political and economic institutions of America. Historical origins of the problems of modern urban existence.

### HOTEL, RESTAURANT AND TRAVEL ADMINISTRATION

#### Introduction HRTA 100

Orientation to the hotel, restaurant and travel industry. Development of the industry, current trends and opportunities in various sectors. See ad, page 6.

### JOURNALISTIC STUDIES

#### Introduction to News Writing and News Reporting JS 200

News writing and reporting. Lectures, discussions, news reports and guest speakers. Students evaluate events and write concise accounts in journalistic style. Limited to 18 students.

### Introduction to Mass Communication JS 201

Impact of mass media on American life, emphasizing both information and entertainment. Student becomes a more aware consumer of mass media products and becomes familiar with basic techniques of media. Two papers, one evaluating newspapers and one on prime time television.

### Seminar: Public Relations Techniques JS 391D

Basic formats in public relations writing, including news releases, features, profiles, editorials, articles, annual reports, etc. Basic principles and practices in effectively informing the public. Guests include newspaper, radio and television journalists from Western Massachusetts.

### LEGAL STUDIES

#### Introductory Legal Studies LEGAL 201

Exploration of the purpose and functions of law and society: legal reasoning and decision-making; the impact of law; the relationship between power and law, and morality and law; problems of achieving justice in contemporary society. Sociology and problems of the legal professions. Legal phenomena in other than formal law settings.

#### Intermediate Legal Studies LEGAL 202

Relationship of the individual to the state and society. Legal safeguards of personal dignity and autonomy and the limits on personal freedom when it conflicts with social values. Legality and ethics of group action to alter the relationship of the individual to the state.

#### Individualism, Community and Legal Process LEGAL 290D

Community—its genesis, nature and forms, disintegration, and impact on individualism. Contradictions between individualism and community and the role which legal process

Talking to your plants won't solve all their problems. Plants also need scientific care. Learn about plant diseases and their influence on the food supply and the environment with this course taught for the first time through the Division of Continuing Education in cooperation with the Department of Plant and Soil Sciences, UMass/Amherst. Common diseases of local fields and gardens are used to illustrate the mechanisms of disease development and spread. The characteristics of microbial pathogens and their interactions with plants are discussed in terms of various strategies used for control. Professor R.A. Rohde, head of the department, brings 17 years of experience to the teaching of Plant Pathology 100: Plant Diseases and Their Control. Course meets on Wednesday evenings.



# plants have problems, too!

PL PATH 100.



plays in this conflict. Compromises between competing ideologies in the form of modern corporate organization and policy. Prerequisite: Legal 201 or permission of the instructor.

## LINGUISTICS

### Introduction to Linguistic Theory (C)

#### LING 201

The nature of language; an in-depth study of important aspects of the structure of the student's language, viewed from the standpoint of modern linguistic theory. Syntactic problems; some attention to phonology, language acquisition, etc.

## MANAGEMENT

### Principles of Management

#### MGT 201

Fundamentals of the management of organizations: behavioral background of formal organizational life, organizational design, integrating factors in collective behavior, organizational change, systems analysis, techniques of decision-making and control, the organization and its environment, and nature of management theory.

### Personnel Management

#### MGT 214

Principles and policies followed by management in recruitment, development, direction and control of personnel.

### Managerial Behavior (Amherst & Holyoke)

#### MGT 230

Principles of human behavior in organizations; understanding one's self as a person and as a manager; development of interpersonal managerial skills. Prerequisite: Management 201.

### Administrative Theory

#### MGT 231

Principles of administration, modern organizational theories, specialization, functionalization, coordination, planning and control, authority status, leadership, decision-making, communication and power structuring. Prerequisites: Management 201, 230.

## MARKETING

### Fundamentals of Marketing

#### MKTG 201

Role of marketing in economic and social structure. Planning, distributing, pricing and promoting goods and services to consumer and industrial markets viewed as internal activities of the firm, and as shaped by environmental forces.

### Buyer Behavior

#### MKTG 210

Analysis of buyer motivation and buying behavior. Theories of consumer market behavior and models of the decision-making process for winning patronage. Prerequisite: Marketing 201 or permission of the instructor.

### Sales Management

#### MKTG 225

Knowledge and skills in the management of the personal

selling function at field, intermediate and top levels. Planning, time and territory management, supervisory functions and control. Prerequisite: Marketing 201.

## MATHEMATICS

### Algebraic Review

#### MATH 101

Rapid review of algebraic manipulations and definitions utilized in calculus. Common subsets of the real numbers; sums, products, and quotients of polynomials; factoring, rational expressions; exponent and radicals; linear and quadratic equations; radical equations; linear and quadratic inequalities; equations and inequalities involving absolute values. Four class hours for one-third semester. Credit: 1. Course Fee: \$35.

### Analytic Geometry with Elementary Functions

#### MATH 102

Introduction to the function concept and analytic geometry. Relations and functions; one-to-one functions and their inverses; linear, quadratic, and other polynomial functions; exponential and logarithmic functions; lines; conic sections. Prerequisite: Math 101. Four class hours for one-third semester. Credit: 1. Course Fee: \$35.

### Precalculus Trigonometry

#### MATH 103

Introduction to trigonometry, covering topics considered essential for standard calculus. Definitions and graphs of cosine, sine, tangent, cotangent, secant, and cosecant; essential identities; introductory triangle trigonometry. Prerequisite: Math 102. Four class hours for one-third semester. Credit: 1. Course Fee: \$35.

### Mathematics for Business I (E)

#### MATH 120

For School of Business Administration students. Linear and analytic mathematical methods and their applications to business. Linear systems of equations, matrices, vectors, Markov chains, linear programming, derivatives. Credit not given after Math 112, 115, 116, 118, or 167.

### Calculus for the Life and Social Sciences I (E)

#### MATH 127

Introduction to differential and integral calculus. Applications to the life and social sciences. Credit given for only one of the courses 116, 118, 127, 131, 135, 137, 146. Prerequisites: high school algebra, analytic geometry.

## MUSIC

### Introduction to Music (C)

#### MUSIC 101

Basic music materials, principles of design, and cultural significance of representative works from the ninth century to the present. Open to all students not majoring in music. Previous musical training not required.

## NURSING

### Leadership in Nursing (Springfield)

#### NURSE 340

Development of a theoretical base for analysis and integration of organizational behavior concepts in health care settings; leadership styles and effectiveness in nursing; and

DIVISION OF CONTINUING EDUCATION-UNIVERSITY OF MASSACHUSETTS/AMHERST

OFFICE USE ONLY

AE76-3

Total Amount Due \$ . . . . .

Amount Received \$ .....

|       |                          |          |
|-------|--------------------------|----------|
| Check | <input type="checkbox"/> | No. .... |
|-------|--------------------------|----------|

☐ Cash

Received By .....

Date Received .....

Comments:

|       |      |     |      |
|-------|------|-----|------|
| Alpha | Comp | Bus | Stud |
|-------|------|-----|------|

| Schedule Number | Department | Course Number | Section | Course Title | Number of Credits | Course Fee |
|-----------------|------------|---------------|---------|--------------|-------------------|------------|
|                 |            |               |         |              |                   | \$         |
|                 |            |               |         |              |                   | \$         |
|                 |            |               |         |              |                   | \$         |
|                 |            |               |         |              |                   | \$         |

| Mail Registration Form and payment to: |  | OPTIONAL FEES                            | REGISTRATION FEE           | TOTAL OPTIONAL FEES     | TOTAL AMOUNT DUE AND ENCLOSED |
|----------------------------------------|--|------------------------------------------|----------------------------|-------------------------|-------------------------------|
| Academic Extension                     |  | Arts Council Fine Arts Fee \$ 3          | (required of all students) | *TOTAL OPTIONAL FEES \$ | \$                            |
| Division of Continuing Education       |  | Health Service Fee \$46                  |                            |                         |                               |
| P.O. Box 835                           |  | Health Insurance Fee \$32                |                            |                         |                               |
| Amherst, Massachusetts 01002           |  | (Available only with Health Service Fee) |                            |                         |                               |
|                                        |  | *Total Optional Fees \$                  |                            |                         |                               |

**Do not include lab fees with registration payment. Lab fees are assessed after classes begin.**

**FULL PAYMENT MUST ACCOMPANY MAIL REGISTRATION**

Make checks payable to: **Division of Continuing Education, AE76-3**









DIVISION OF CONTINUING EDUCATION - UNIVERSITY OF MASSACHUSETTS/AMHERST

[illegible]

| FIRST NAME | INITIAL | LAST NAME |
|------------|---------|-----------|
|------------|---------|-----------|

Address \_\_\_\_\_

| CITY   | STATE | ZIP CODE |
|--------|-------|----------|
| ALBANY | NY    | 12207    |
| ALBANY | NY    | 12208    |
| ALBANY | NY    | 12209    |
| ALBANY | NY    | 12210    |
| ALBANY | NY    | 12211    |
| ALBANY | NY    | 12212    |
| ALBANY | NY    | 12213    |
| ALBANY | NY    | 12214    |
| ALBANY | NY    | 12215    |
| ALBANY | NY    | 12216    |
| ALBANY | NY    | 12217    |
| ALBANY | NY    | 12218    |
| ALBANY | NY    | 12219    |
| ALBANY | NY    | 12220    |
| ALBANY | NY    | 12221    |
| ALBANY | NY    | 12222    |
| ALBANY | NY    | 12223    |
| ALBANY | NY    | 12224    |
| ALBANY | NY    | 12225    |
| ALBANY | NY    | 12226    |
| ALBANY | NY    | 12227    |
| ALBANY | NY    | 12228    |
| ALBANY | NY    | 12229    |
| ALBANY | NY    | 12230    |
| ALBANY | NY    | 12231    |
| ALBANY | NY    | 12232    |
| ALBANY | NY    | 12233    |
| ALBANY | NY    | 12234    |
| ALBANY | NY    | 12235    |
| ALBANY | NY    | 12236    |
| ALBANY | NY    | 12237    |
| ALBANY | NY    | 12238    |
| ALBANY | NY    | 12239    |
| ALBANY | NY    | 12240    |
| ALBANY | NY    | 12241    |
| ALBANY | NY    | 12242    |
| ALBANY | NY    | 12243    |
| ALBANY | NY    | 12244    |
| ALBANY | NY    | 12245    |
| ALBANY | NY    | 12246    |
| ALBANY | NY    | 12247    |
| ALBANY | NY    | 12248    |
| ALBANY | NY    | 12249    |
| ALBANY | NY    | 12250    |
| ALBANY | NY    | 12251    |
| ALBANY | NY    | 12252    |
| ALBANY | NY    | 12253    |
| ALBANY | NY    | 12254    |
| ALBANY | NY    | 12255    |
| ALBANY | NY    | 12256    |
| ALBANY | NY    | 12257    |
| ALBANY | NY    | 12258    |
| ALBANY | NY    | 12259    |
| ALBANY | NY    | 12260    |
| ALBANY | NY    | 12261    |
| ALBANY | NY    | 12262    |
| ALBANY | NY    | 12263    |
| ALBANY | NY    | 12264    |
| ALBANY | NY    | 12265    |
| ALBANY | NY    | 12266    |
| ALBANY | NY    | 12267    |
| ALBANY | NY    | 12268    |
| ALBANY | NY    | 12269    |
| ALBANY | NY    | 12270    |
| ALBANY | NY    | 12271    |
| ALBANY | NY    | 12272    |
| ALBANY | NY    | 12273    |
| ALBANY | NY    | 12274    |
| ALBANY | NY    | 12275    |
| ALBANY | NY    | 12276    |
| ALBANY | NY    | 12277    |
| ALBANY | NY    | 12278    |
| ALBANY | NY    | 12279    |
| ALBANY | NY    | 12280    |
| ALBANY | NY    | 12281    |
| ALBANY | NY    | 12282    |
| ALBANY | NY    | 12283    |
| ALBANY | NY    | 12284    |
| ALBANY | NY    | 12285    |
| ALBANY | NY    | 12286    |
| ALBANY | NY    | 12287    |
| ALBANY | NY    | 12288    |
| ALBANY | NY    | 12289    |
| ALBANY | NY    | 12290    |
| ALBANY | NY    | 12291    |
| ALBANY | NY    | 12292    |
| ALBANY | NY    | 12293    |
| ALBANY | NY    | 12294    |
| ALBANY | NY    | 12295    |
| ALBANY | NY    | 12296    |
| ALBANY | NY    | 12297    |
| ALBANY | NY    | 12298    |
| ALBANY | NY    | 12299    |
| ALBANY | NY    | 12300    |
| ALBANY | NY    | 12301    |
| ALBANY | NY    | 12302    |
| ALBANY | NY    | 12303    |
| ALBANY | NY    | 12304    |
| ALBANY | NY    | 12305    |
| ALBANY | NY    | 12306    |
| ALBANY | NY    | 12307    |
| ALBANY | NY    | 12308    |
| ALBANY | NY    | 12309    |
| ALBANY | NY    | 12310    |
| ALBANY | NY    | 12311    |
| ALBANY | NY    | 12312    |
| ALBANY | NY    | 12313    |
| ALBANY | NY    | 12314    |
| ALBANY | NY    | 12315    |
| ALBANY | NY    | 12316    |
| ALBANY | NY    | 12317    |
| ALBANY | NY    | 12318    |
| ALBANY | NY    | 12319    |
| ALBANY | NY    | 12320    |
| ALBANY | NY    | 12321    |
| ALBANY | NY    | 12322    |
| ALBANY | NY    | 12323    |
| ALBANY | NY    | 12324    |
| ALBANY | NY    | 12325    |
|        |       |          |

|                           |                      |                      |                      |
|---------------------------|----------------------|----------------------|----------------------|
| Phone No.                 | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Area Code                 | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| If No Phone, Write "None" | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Student No.               | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Business (Day) Phone \_\_\_\_\_ ☐ Male

Marital Status \_\_\_\_\_

Age \_\_\_\_\_

☐ Female

1. Workshop No. 

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|--|--|--|--|

 Title: \_\_\_\_\_

Fee: \_\_\_\_\_

\* Alternative Choice No. 

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|--|--|--|--|

Title: \_\_\_\_\_

Fee: \_\_\_\_\_

2. Workshop No. 

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|--|--|--|--|

 Title: \_\_\_\_\_

Fee: \_\_\_\_\_

**\* Alternative Choice No.**

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|--|--|--|--|

**Title:** \_\_\_\_\_

Fee: \_\_\_\_\_

3. Workshop No. 

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|--|--|--|--|

Title: \_\_\_\_\_

Fee: \_\_\_\_\_

\* Alternative Choice No. 

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|--|--|--|--|

Title: \_\_\_\_\_

Fee: \_\_\_\_\_

**FULL PAYMENT MUST ACCOMPANY MAIL REGISTRATION**

Make checks payable to: **Division of Continuing Education, AE 76-30**  
Send to: **Credit-Free Workshops, AE 76-30**

**Division of Continuing Education  
P.O. Box 835  
Amherst, Ma. 01002**

TOTAL WORKSHOP FEES

## REGISTRATION FEES

**TOTAL AMOUNT DUE  
AND ENCLOSED**

**OPTIONAL:** Your answers to these questions will guide us in planning future workshops. The information will be confidential if you choose to answer.

1. How did you find out about these workshops? \_\_\_\_\_

2. What other workshops would you like to have offered?

3. Do you work? \_\_\_\_\_ If yes, at what?

4. Are you a student? \_\_\_\_\_ If yes, where?

## 5. Other comments

AE 76-30

Total Amount Due \$ . . . . .

Amount Received \$ .....

Cash (no change)

Check No. . . . .

S.C.F.W.

Received By . . . . .

Date Received . . . . .

Comments:



models of management in the delivery of nursing care. Application to situations derived from the student's experiences with health care organizations.

**Seminar: A Model of the Patient Teaching Process  
NURSE 391A**

Nurse's role as a health teacher—helping patients learn continually to adjust to their disease or conditions in a changing environment. Principles of teaching and learning, basic communication skills; pedagogy vs. androgogy and the wellness-illness continuum.

**Seminar: Communication in Nursing  
NURSE 391B**

Interpersonal relationships of individuals who are seeking health care for problems other than psychiatric, such as medical-surgical patients in a general hospital, or out-patients. Students learn how to conduct structured and non-structured interviews, and develop communication skills.

**Seminar: Common Health Problems of Infants and Children:  
Nursing Care and Management (Springfield) NURSE 391C**

Problem-solving approach in the process of assessing, planning, implementing and evaluating nursing care involving health problems which frequently occur in infants and children. Impact of illness and hospitalization on infants and children and their families.

## PHILOSOPHY

**Introduction to Philosophy (C)  
PHIL 105**

Some of the most important general questions, ideas, theories, and methods of inquiry which have given direction to Western thought.

**Ethics (C)  
PHIL 110**

Classical and contemporary theories concerning policy formation and justification of personal decisions and ways of life.

**Plato and Aristotle (C)**

**PHIL 201**

Major works of Plato and Aristotle in ethics, logic, and metaphysics; systematic character of their thought and its contemporary relevance. Prerequisite: one course in philosophy.

## PHYSICS

**Introduction to Physics: The World Beyond Our Senses (E)  
PHYSIC 100**

The universe in terms of its basic building blocks—atoms, nuclei, and "elementary particles." New views of nature derived from the ability to see and measure the world of the very small.

## PLANT AND SOIL SCIENCES

**Basic Plant Science (E)  
PLSOIL 100**

Introduction to the study of crop plants: soil, mineral nutrition, physiological principles and environmental factors related to the growth and development of economic crops.

**Landscape Maintenance  
PLSOIL 190X**

Home outdoor maintenance: care of lawns, fruit and shade trees, shrubs and flowers. Home landscape development: planting, pruning, use of fertilizer and mulching. *Not open to Plant and Soil Sciences majors.*

**Small Fruit Technology  
PLSOIL 205**

Principles and modern practices involved in the culture of strawberries, highbush and lowbush blueberries, fresh market and wine grapes, raspberries, apples, pears, peaches and cherries. For both the home gardener and those interested in commercial production.

# Introduction to the Polish People

*Introduction to the Polish People*, offered in cooperation with the Slavic Languages and Literatures Department of the University of Massachusetts/Amherst, attempts to satisfy the needs of Polish-American students searching for their roots. In addition, the course deals academically with a major immigrant group which has played an important role in the development of the United States since 1608. Lectures emphasize Polish History, history of the Poles in America, folk arts and crafts, folk traditions, as well as the fine arts. The course includes the history of Poland in the 16th and 17th centuries, the Golden Age, and Poland's early struggle for political and religious freedom.

**POLISH 290C**



## PLANT PATHOLOGY

### Plant Diseases and Their Control PLPATH 100

Occurrence and importance of plant diseases in the production of plants for food, clothes, shelter and beauty. Infectious agents and environmental factors, and principles of their control. See ad, page 17.

## POLISH

### Introduction to the Polish People POLISH 290C

Survey of Polish civilization with lectures, slides, film, exhibits and demonstrations. No knowledge of the Polish language required. See ad, page 23.

## POLITICAL SCIENCE

### Public Administration (D) POLSCI 223

Organization of bureaucracy, bureaucratic life, constitutional position and political role of governmental bureaucracy.

### Political Theory and Public Policy (D) (Holyoke) POLSCI 226

Social policy in the United States. Normative issues raised in controversies over selected cases of social and economic policy in the light of main traditions of Western political thought and of recent work on logical and ethical aspects of social choice.

### Constitutional Law (D) POLSCI 260

The United States Supreme Court and leading cases interpreting the United States Constitution.

## PSYCHOLOGY

### Elementary Psychology (D) PSYCH 101

Introduction to the basic approaches and concepts of modern psychology. Examples from the areas of perception, conditioning, cognitive processes, social behavior, tests and measurement, and personality.

### Psychological Methods (D) PSYCH 141

Introduction to the ways questions about behavior are formulated and then tested through experiments. Lectures and laboratory experiences involving concepts from many areas of psychology expose psychology majors to procedures utilized in designing, conducting and reporting experiments. Prerequisite: Psychology 101.

### Sensation and Perception (D) PSYCH 210

Methods, data and theories of the functioning of various sensory systems. Surveys basic sensory processes in cutaneous sensation, audition, vision, gustation and olfaction; and higher perceptual processes in selected senses. Prerequisite: Psychology 101.

### Child Behavior and Development (D) PSYCH 260

Psychological development of the child, including theories, methods and data of child behavior studies. Prerequisite: Psychology 101.

### Social Psychology (D) PSYCH 280

Introduction to the principles and study of social behavior. Psychological factors involved in attitude formation and change, communication and persuasion, and small group processes. Prerequisite: Psychology 101.

### Theories and Practice in Counseling PSYCH 365

Theories, techniques and tests necessary in counseling and guidance. Practice in organizing and evaluating relevant data in the analysis of illustrative cases. Prerequisite: Psychology 270, or 311, or permission of the instructor.

### Seminar: Community Mental Health (Holyoke) PSYCH 391J

Review of the origins of the community mental health movement in terms of the shortcomings of traditional mental health models and the development of new approaches. Examination and evaluation of specific community mental health programs: crisis intervention, early detection, use of paraprofessionals, prevention of emotional disorder, environmental interventions, social change and social networks.

## RHETORIC

### Language and Writing (B) RHET 100G

Basic language behavior course: writing, editing and rewriting to attain clarity in the use of words, syntax and organization. Subject matter is interdisciplinary. **Note:** This is *not* a remedial writing course. It will begin at a more elementary level than other Group One courses, but will develop in rapid sequence to accomplish the same goals as other Rhetoric 100 courses.

### Language and Speaking (B) RHET 110A

Interpersonal and public communication: selection, arrangement and development of ideas and materials for oral communication; the use of language for conveying meaning, thinking, reasoning, problem-solving and decision-making; analysis of audience attitudes and beliefs; identification of purpose and assessment of effects of communication; ethical considerations in influencing others; and evaluation of one's own and others' public messages.

## SOCIOLOGY

### Self, Society and Interpersonal Relations (D) SOCIOL 105

Introduction to basic concepts, perspectives and data in sociology, via the approach of social psychology. Relationship between individual, group and society. Socialization, social roles, social interaction, dynamics of small groups, the self, attitudes and language and communication.

**Higher Education in America (D)****SOCIOL 224**

Organizational context within which undergraduate and post-graduate education take place. Historical and international comparison, with review of discussions of individual development. Higher education in its broader relationship to other human activities.

**Social Movements (D)****SOCIOL 246**

Analysis of structure, dynamics and significance of both political and religious social movements, particularly in modern society. Effects on a social movement of leadership, ideology, member commitment and control and opposition.

**Deviance and Social Order (D)****SOCIOL 250**

Relationship between deviance and the maintenance of social order. Sociological theories of individual and sub-cultural deviance, with emphasis on the role of agents of social control in the definition of categories of deviance and in the selection and treatment of deviants. Primarily for upper division students. Prerequisite: at least one other Sociology course, preferably at the 100 level.

**Background to the Study of Social Welfare (D)****SOCIOL 292**

Historical development and current status of British and American concerns about poverty in the context of the Industrial Revolution. Sociological perspectives concerning differentials in the access to economic security and social rewards. Problems of measurement and planning related to social policies.

**SPANISH****Elementary Spanish I****SPAN 110**

For students with no previous creditable training in Spanish. Intensive practice in language skills. To fulfill the language requirement, most students are required to continue by taking Spanish 120, 130, 140.

**STATISTICS****Elementary Statistics (E)****STATIS 121**

Selected topics in elementary probability and statistics: discrete models for chance experiments, conditional probabilities; "odds" and betting schemes, combinatorics, averages and standard deviation, random sampling, binomial and normal distributions, regression, statistical inference, chi-square test. Students who intend to use statistics as a research tool, but who do not have a calculus background, should elect Statistics 231, 232. Students with a calculus background should elect Statistics 315, 316.

**WOMEN'S STUDIES****Introduction to Women's Studies (Holyoke)****WOST 190**

Women's lives and the history of women's experiences from a variety of perspectives. Included are works of Betty

Friedan, Shulamith Firestone, Gornick and Moran, Joyce Ladner, Sheila Rowbotham, Ann Oakley, Simone de Beauvoir, and an anthology of feminist papers edited by Alice Rossi.

**The English Woman, 1815-1914****WOST 290C**

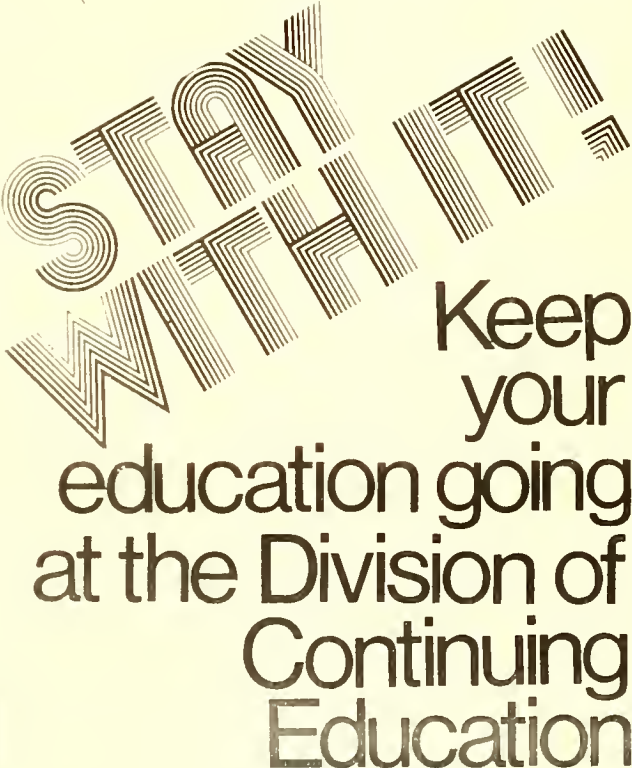
Changes effected in the lives of women by 19th century industrialization and urbanization. Includes love, marriage and divorce; education; childhood; class issues; politics; roles of famous women; and Feminism.

**ZOOLOGY****Introductory Zoology (E)****ZOOL 101**

Principles of zoology including cell structure and metabolism, heredity, development, behavior, evolution, ecology, and anatomy and physiology of major groups in the animal kingdom. Background for understanding current biological problems. Two class hours, one three-hour laboratory.

**Scientific Illustration****ZOOL 286A**

Introduction to basic techniques and development of skills necessary for creation of scientific illustrations for use in technical papers and teaching aids. Appreciation of the field of scientific illustration. Some background in basic design is helpful.



**STAY WITH IT!**

Keep  
your  
education going  
at the Division of  
Continuing  
Education

**Credit-Free Workshop  
information begins on  
page 33.**



# DAY/LOCATION SCHEDULE

## MONDAY

ANTH 104/Introduction to Cultural Anthropology  
 Art 100/Basic Drawing  
 ART 240/Printmaking Relief  
 BA 110/Introduction to Computers for Business  
 BGS 100A/Women in Society  
 COINS 122/Intro to Problem Solving Using the Computer  
 ECON 181/Economics and Urban Problems  
 EDUC-H 910/School Counseling Theory  
 EDUC-T 590E/Decision-Making Processes  
 ENGL 262/The Modern Novel  
 FRENCH 110/Elementary French I  
 GB FIN 201/Corporation Finance  
 GEOL 191/Introduction to Rocks and Minerals  
 HIST 337/The City and the Modern U.S.  
 HRTA 100/Introduction  
 LEGAL 202/Intermediate Legal Studies  
 LING 201/Intro to Linguistic Theory  
 MATH 101/An Algebraic Review  
 MATH 102/Analytic Geometry with Elementary Functions  
 MATH 103/Precalculus Trigonometry  
 MGT 214/Personnel Management  
 MKTG 225/Sales Management  
 MUSIC 101/Introduction to Music  
 PL SOIL 100/Basic Plant Science  
 PSYCH 101/Elementary Psychology  
 RHET 100G/Language and Writing  
 SOCIOL 292/Background to the Study of Social Welfare  
 WOST 190/Introduction to Women's Studies

## TUESDAY

ACCTG 120/Introduction to Financial Accounting  
 AN SCI 386A/Horse Breeds, Types and Selection  
 ART 117/Introduction to Visual Arts  
 ART 120/Basic Design I  
 ART 242/Printmaking: Intaglio I  
 ART 260/Sculpture I  
 BGS 201/Occupational Safety—Health Management  
 BOTANY 101/General Botany  
 CONTED 0505/Catalog and Classification (Lib. Sci.)  
 CONTED 0528/Multi-Media and the Library (Lib. Sci.)  
 ECON 104/Intro to Macroeconomics  
 EDUC 290B/590B/Innovative Approaches to Adult Education  
 EDUC-H 701/Practicum for School Guidance  
 ENGL 152/Reading Fiction  
 ENT 126/Insects and Man

FRENCH 120/Elementary French II  
 GB FIN 260/Introduction to Law  
 HIST 140/European History  
 JS 200/Intro to News Writing and News Reporting  
 MATH 120/Math for Business  
 MATH 127/Calculus for the Life and Social Sciences I  
 MGT 230/Managerial Behavior  
 MGT 230/Managerial Behavior  
 MKTG 201/Fundamentals of Marketing  
 NURSE 340/Leadership in Nursing  
 NURSE 391A/Seminar: A Model of the Patient Teaching Process  
 PHIL 105/Introduction to Philosophy  
 PHYSIC 100/Introduction to Physics: the Worlds Beyond Our Senses  
 PL SOIL 190X/Landscape Maintenance  
 POLSCI 260/Constitutional Law  
 PSYCH 141/Psychological Methods  
 PSYCH 280/Social Psychology  
 RHET 110A/Language and Speaking  
 SOCIOL 246/Social Movements  
 WOST 290C/The English Woman  
 ZOOL 101/Introductory Zoology (Lecture)

## WEDNESDAY

ANTH 290Z/Man and the Horse  
 ART 100/Basic Drawing  
 ART 190C/Visual Arts of Asia  
 ART 240/Printmaking Relief I  
 COINS 201/Assembly Language Programming  
 COMSTU 210/Interpersonal Communications  
 EDUC 290A/Photography I  
 EDUC-D 390A/690A/Nutrition, Learning and Behavior  
 EDUC-H 791C/Seminar: The Role of the Elementary School Counselor  
 ENGL 341/Creative Writing  
 GB FIN 250/Administrative Statistics  
 HIST 320/Civil War Era  
 JS 201/Introduction to Mass Communication  
 LEGAL 290D/Individualism, Community, and Legal Process  
 MATH 101/An Algebraic Review  
 MATH 102/Analytic Geometry with Elementary Functions  
 MATH 103/Precalculus Trigonometry  
 MGT 231/Administrative Theory  
 MKTG 210/Buyer Behavior  
 NURSE 391B/Seminar: Communication in Nursing  
 PHIL 201/Plato and Aristotle  
 PL PATH 100/Plant Diseases and Their Control  
 PL SOIL 205/Small Fruit Technology  
 POLISH 290C/Introduction to the Polish People  
 POLSCI 223/Public Administration  
 PSYCH 210/Sensation and Perception

PSYCH 365/Theories of Counseling  
 PSYCH 391J/Community Mental Health  
 SOCIOL 105/Self, Society and Interpersonal Relations  
 SPAN 110/Elementary Spanish  
 STATIS 121/Elementary Statistics

## THURSDAY

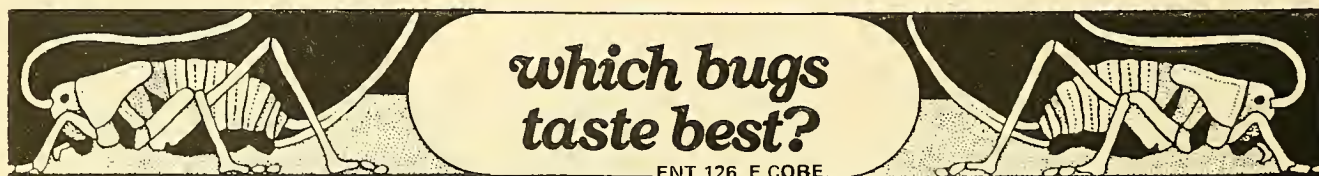
ACCTG 130/Introduction to Managerial Accounting  
 ANTH 103/Introduction to Physical Anth  
 ART 120/Basic Design I  
 ART 242/Printmaking: Intaglio I  
 ART 260/Sculpture I  
 ASTRON 100/Exploring the Universe  
 BGS 100B/Back to School  
 COMSTU 121/Intro to Mass Communications  
 ECON 103/Intro to Macroeconomics  
 EDUC 290C/Dramatizing the Curriculum  
 EDUC 290D/Human Crisis: Interventions for Helpers  
 EDUC-H 791D/Individual Intelligence Testing  
 FS & N 102/World Food Habits  
 GEOL 105/Geology and Man  
 GEOL 105/Geology and Man  
 HIST 186/New Approaches: Lizzie Borden  
 JS 391D/Seminar: Public Relations  
 LEGAL 201/Introduction to Legal Studies  
 MATH 120/Mathematics for Business I  
 MATH 127/Calculus for the Life and Social Sciences I  
 MGT 201/Principles of Management  
 PHIL 110/Introduction to Ethics  
 POLSCI 226/Political Theory and Public Policy  
 PSYCH 260/Child Psychology  
 SOCIOL 224/Higher Education in America  
 SOCIOL 250/Deviance and Social Order  
 ZOOL 101/Introductory Zoology (Lab)  
 ZOOL 286A/Scientific Illustration

## BY ARRANGEMENT

*NURSE 391C/Common Health Problems of Infants and Children: Nursing Care and Management*

*Courses appearing in italics are to be held in Springfield; exact location to be announced.*

*Courses appearing in bold are to be held at Holyoke Community College; check Schedule of Courses for exact location.*



Can potato bugs read? Why do moths run into streetlights? Why do mosquitoes always seem to attack when we are trying to sleep? Do the ugliest lady cockroaches become wall flowers? Are insects sexier than humans? Is the only good bug a dead bug? Entomology 126 studies the answers to these questions as well as the widespread effect of insects on human life and well being.



# SCHEDULE OF COURSES

DEPT COURSE SCHEDULE TITLE CORE CR  
SEC NUMBER MEETING TIMES BLOG ROOM

## A-C-C-O-U-N-T-I-N-G

ACCTG 120\* INTRO FINAN ACCTG 3CR  
1 931918 TU 19.00-22.00 SBA 2  
ACCTG 130\* INTRO TO MGRL ACCTG 3CR  
1 932126 TH 19.00-22.00 SBA 2

## A-N-I-M-A-L S-C-I-E-N-C-E

AN SCI 386A SP-MRS BROS-TYP-SEL 3CR LAB FEE: \$5.00  
91 932304 TU 19.00-22.00 GRIN

## A-N-T-H-R-O-P-O-L-O-G-Y

ANTH 103\* INTRO PHYSICAL ANTH 3CR  
1 932485 TH 19.00-22.00 MACH W-17  
ANTH 104\* INTRO CULTURAL ANTH 3CR  
1 932663 M 19.00-22.00 HERT 102  
ANTH 2902 MAN & THE HORSE 3CR  
91 932841 W 19.00-22.00 HERT 102

## A-R-T

ART 100\* BASIC DRAWING C 3CR  
1 933203 MW 19.00-22.00 FAC 429  
ART 117\* INTRO TO VISUAL ARTS C 3CR  
1 933384 TU 19.00-22.00 BART 219  
ART 120\* BASIC DESIGN I C 3CR  
1 933562 TUTH 19.00-22.00 FAC 431  
ART 190C VISUAL ARTS OF ASIA 3CR  
91 933740 W 19.00-22.00 HERT 116  
ART 240\* PRINTMAKING-REL I C 3CR LAB FEE: \$8.00  
1 933928 MW 19.00-22.00 FAC 431  
ART 242\* PRINTMAKING-INTAG I C 3CR LAB FEE: \$12.00  
1 934102 TUTH 19.00-22.00 HERT 108  
ART 260\* SCULPTURE I C 3CR LAB FEE: \$15.00  
1 934283 TUTH 19.00-22.00 FREN 8

## A-S-T-R-O-N-O-M-Y

ASTRON 100\* EXPLORING UNIVERSE E 3CR  
1 934461 TH 19.00-22.00 HAS 107

## B-U-S-I-N-E-S-S A-O-M-I-N-I-S-T-R-A-T-I-O-N

BA 110\* INTRO BUS COMP 3CR LAB FEE: \$15.00  
1 934649 M 19.00-22.00 SBA 68

## B-A-C-H-E-L-O-A O-F G-E-N-E-R-A-L S-T-U-D-I-E-S

BGS 100A WOMEN IN SOCIETY 3CR  
91 934827 M 19.00-22.00 HERT 107  
BGS 100B BACK TO SCHOOL 3CR Lab Fee: \$10.00  
91 935001 TH 19.00-22.00 HERT 102  
BGS 201\* OCCUP SAFETY-MLTH MGT 3CR  
1 935182 TU 19.00-22.00 HLYKCC A342

## B-O-T-A-N-Y

BOTANY 101\* GENERAL BOTANY E 3CR LAB FEE: \$2.00  
1 935360 TU 19.00-22.00 MOR 301

## C-O-M-P-U-T-E-R & I-N-F-O-R-M-A-T-I-O-N S-C-I-E-N-C-E

COINS 122\* INTR PRB SOLV W/COMP E 4CR LAB FEE: \$10.00  
1 935548 M 19.00-22.00 GRES 208  
COINS 201\* ASSEMBLY LANG PROGRAM 4CR LAB FEE: \$10.00  
1 935726 W 19.00-22.00 GRES 208

## C-O-M-M-U-N-I-C-A-T-I-O-N S-T-U-D-I-E-S

COMSTU 121\* INTRO TO MASS COMM O 3CR  
1 935904 TH 19.00-22.00 HERT 113  
COMSTU 210\* INTERPERSONAL COMM C 3CR  
1 936081 W 19.00-22.00 HERT 107

DEPT COURSE SCHEDULE TITLE CORE CR  
SEC NUMBER MEETING TIMES BLOG ROOM

## C-O-N-T-I-N-U-I-N-G E-D-U-C-A-T-I-O-N

CONTEO 0505 CATALOG & CLASSIFICA 3CR  
1 936269 TU 19.00-21.30 HERT 107  
URI LIBRARY SCIENCE CREDIT  
CONTEO 0528 MLTI MEDIA & THE LIB 3CR  
1 936447 TU 4.00-18.30 HERT 102  
URI LIBRARY SCIENCE CREDIT

NOTE: Courses listed as CONTEO are offered through the University of Rhode Island Extension Program and carry three (3) URI graduate credits unless otherwise specified. Transcripts are maintained by URI Division of University Extension, Promenade and Gaspee Streets, Providence, RI 02908. (Library Science course descriptions can be found on page 31.)

## E-C-O-N-O-M-I-C-S

ECON 103\* INTRO TO MICROECON D 3CR  
1 936625 TH 19.00-22.00 SBA 102  
ECON 104\* INTRO TO MACROECON O 3CR  
1 936803 TU 19.00-22.00 SBA 102  
ECON 181\* ECON & URBAN PROBS O 3CR  
1 936984 W 19.00-22.00 HERT 111

## E-D-U-C-A-T-I-O-N

EDUC 290A PHOTOGRAPHY I 3CR  
91 937168 W 19.00-22.00 HERT 111  
EDUC 290B INNO APPR ADULT ED 3CR  
81 000001 TU 19.00-22.00 HERT  
EDUC 290C DRAMATIZING THE CURR 3CR  
91 937346 TH 19.00-22.00 HERT 107  
EDUC 2900 HUM CRIS/INTRV HLPRS 3CR  
91 937524 TH 19.00-22.00 HERT 111  
EDUC 590B INNO APPR ADULT ED 3CR  
91 000002 TU 19.00-22.00 HERT

## E-D-U-C O-E-S-I-G-N-S E-F-F-E-C-T L-E-A-R-N-I-N-G

EDUC O 390A NUTRIT/LRNG & BEHAV 3CR  
91 937702 W 19.00-22.00 HERT 113  
EDUC O 690A NUTRIT/LRNG & BEHAV 3CR  
91 937883 W 19.00-22.00 HERT 113

## E-D-U-C M-U-M A-P-P-L S-O-C & B-E-H S-C-I

EDUC M 701\* PRCTCM IN SCH GUID 6CR  
1 938067 TU 19.00-22.00 HERT 111  
EDUC M 791C SEM-POLE ELM SCH COU 3CR  
91 938245 W 19.00-22.00 HERT 117  
EDUC H 7910 SEM-INDIV INTEL \*EST 3CR  
91 938423 TH 19.00-22.00 HERT 117  
EDUC M 910\* SCH COUNSLING THEORY 3CR  
1 938601 W 19.00-22.00 HERT 113

## E-D-U-C T-R-A-N-S-D-I-S-C-I-P-L-I-N-A-R-Y

EDUC T 590E DECISION PROCESSES 3CR  
91 000003 M 19.00-22.00 HERT

NOTE: Specific room assignments not made at the time this catalog was printed will be made by the time In-Person Registration takes place.

## E-N-G-L-I-S-H

ENGL 152\* READING FICTION C 3CR  
1 938960 TU 19.00-22.00 HERT 113  
ENGL 262\* MOD NOVEL 1930-1960 C 3CR  
1 939144 W 19.00-22.00 HERT 117  
ENGL 341\* CREATIVE WRITING 3CR LAB FEE \$5.00  
1 939322 W 19.00-22.00 HERT 104

| DEPT                                                 | COURSE | SCHEDULE                                  | TITLE     | CORE                 | CR |
|------------------------------------------------------|--------|-------------------------------------------|-----------|----------------------|----|
| SEC                                                  | NUMBER | MEETING TIMES                             | BLOG ROOM |                      |    |
| <b>E-N-T-O-M-O-L-O-G-Y</b>                           |        |                                           |           |                      |    |
| ENT                                                  | 126*   | INSECTS AND MAN                           | E         | 3CP                  |    |
| 1                                                    | 939500 | TU 19.00-22.00                            | FERN      | R-1                  |    |
| <b>F-R-E-N-C-H</b>                                   |        |                                           |           |                      |    |
| FRENCH                                               | 110*   | ELEMENTARY FRENCH                         |           | 3CP                  |    |
| 1                                                    | 939681 | M 19.00-22.00                             | HERT      | 118                  |    |
| FRENCH                                               | 120*   | ELEMENTARY FRENCH                         |           | 3CP                  |    |
| 1                                                    | 939869 | TU 19.00-22.00                            | HERT      | 117                  |    |
| <b>F-O-O-D S-C-I-E-N-C-E &amp; N-U-T-R-I-T-I-O-N</b> |        |                                           |           |                      |    |
| FSGN                                                 | 102*   | WORLD FOOD HABITS                         |           | 3CP                  |    |
| 1                                                    | 940048 | TH 19.00-22.00                            | HERT      | 118                  |    |
| <b>G-E-N-E-R-A-L B-U-S-I-N-E-S-S F-I-N-A-N-C-E</b>   |        |                                           |           |                      |    |
| GB FIN                                               | 201*   | CORPORATION FINANCE                       |           | 3CP                  |    |
| 1                                                    | 940226 | M 19.00-22.00                             | SBA       | 102                  |    |
| GB FIN                                               | 250*   | ADMINISTRATIVE STAT                       |           | 3CP LAB FEE: \$6.00  |    |
| 1                                                    | 940406 | W 19.00-22.00                             | SBA       | 102                  |    |
| GB FIN                                               | 260*   | INTRO TO LAW                              |           | 3CP                  |    |
| 1                                                    | 940585 | TU 19.00-22.00                            | SBA       | 103                  |    |
| <b>G-E-O-L-O-G-Y</b>                                 |        |                                           |           |                      |    |
| GEOL                                                 | 105*   | GEOLOGY AND MAN                           | E         | 3CP LAB FEE: \$3.00  |    |
| 1                                                    | 940763 | TH 19.00-22.00                            | MOR4      | 161                  |    |
| 2                                                    | 000004 | TH 9.05-12.05                             | HLKY CC   | C214                 |    |
| GEOL                                                 | 191*   | ROCKS & MINERALS                          | E         | 3CP LAB FEE: \$3.00  |    |
| 1                                                    | 940941 | M 19.00-22.00                             | MOR4      | 161                  |    |
| <b>H-I-S-T-O-R-Y</b>                                 |        |                                           |           |                      |    |
| HIST                                                 | 140*   | P8 EUR HIS 1500-1815                      | C         | 3CP LAB FEE: \$10.00 |    |
| 1                                                    | 941125 | TU 19.00-22.00                            | HERT      | 118                  |    |
| HIST                                                 | 186*   | NEW APPROACH AM HIST                      | C         | 3CP                  |    |
| 1                                                    | 941303 | TH 19.00-22.00                            | HEFT      | 106                  |    |
| HIST                                                 | 320*   | THE CIVIL WAR ERA                         | C         | 3CP                  |    |
| 1                                                    | 941484 | M 19.00-22.00                             | HERT      | 119                  |    |
| HIST                                                 | 337*   | CITY IN MODERN US                         | C         | 3CP                  |    |
| 1                                                    | 941662 | M 19.00-22.00                             | HERT      | 119                  |    |
| <b>H-O-T-E-L R-E-S-T &amp; T-R-A-V-E-L A-D-M-I-N</b> |        |                                           |           |                      |    |
| HRTA                                                 | 100*   | INTRODUCTION                              |           | 3CP                  |    |
| 1                                                    | 941840 | M 19.00-22.00                             | FLIN      | 103                  |    |
| <b>J-O-U-R-N S-T-U-D-I-E-S</b>                       |        |                                           |           |                      |    |
| JS                                                   | 200*   | INTR NEWS & RPTNG                         |           | 3CP LAB FEE: \$5.00  |    |
| 1                                                    | 942024 | TU 19.00-22.00                            | MAJH      | E-10                 |    |
| JS                                                   | 201*   | INTRO TO MASS COMM                        |           | 3CP LAB FEE: \$5.00  |    |
| 1                                                    | 942202 | W 19.00-22.00                             | HERT      | 205                  |    |
| JS                                                   | 3910   | SEM-PUBLIC REL                            |           | 3CP                  |    |
| 91                                                   | 942363 | TH 19.00-22.00                            | HEFT      | 110                  |    |
| <b>L-E-G-A-L S-T-U-D-I-E-S P-R-O-G-R-A-M</b>         |        |                                           |           |                      |    |
| LEGAL                                                | 201*   | INTRO LEGAL STUDIES                       |           | 3CP LAB FEE: \$4.00  |    |
| 1                                                    | 942561 | TH 19.00-22.00                            | SBA       | 110                  |    |
| LEGAL                                                | 202*   | INTER LEGAL STUDIES                       |           | 3CP LAB FEE: \$4.00  |    |
| 1                                                    | 942749 | M 19.00-22.00                             | SBA       | 110                  |    |
| LEGAL                                                | 290D   | IND/COMM & LEGAL PRO                      |           | 3CP LAB FEE: \$4.00  |    |
| 91                                                   | 942927 | W 19.00-22.00                             | SBA       | 110                  |    |
| <b>L-I-N-G-U-I-S-T-I-C-S</b>                         |        |                                           |           |                      |    |
| LING                                                 | 201*   | INTRO LING THEORY                         | C         | 3CP                  |    |
| 1                                                    | 943101 | M 19.00-22.00                             | HERT      | 108                  |    |
| <b>M-A-T-H-E-M-A-T-I-C-S</b>                         |        |                                           |           |                      |    |
| MATH                                                 | 101*   | ALGEBRAIC REVIEW                          |           | 1CR                  |    |
|                                                      |        | SEPT 6-OCT 4-NO DROPS, ADDS AFTER SEPT 10 |           |                      |    |
|                                                      |        | FINAL EXAM OCT 4, 19.00-21.00             |           |                      |    |
| MATH                                                 | 102*   | ANAL GEOM/ELEM FUNC                       |           | 1CR                  |    |
|                                                      |        | OCT 11-NOV 8-NO DROPS, ADDS AFTER OCT 15  |           |                      |    |
|                                                      |        | FINAL EXAM NOV 8, 19.00-21.00             |           |                      |    |
| MATH                                                 | 103*   | PRECALC TRIG                              |           | 1CR                  |    |
|                                                      |        | NOV 12-OCT 15-NO DROPS, ADDS AFTER NOV 19 |           |                      |    |
|                                                      |        | FINAL EXAM DEC 13, 19.00-21.00            |           |                      |    |
| MATH                                                 | 120*   | MATH FOR BUSINESS I                       |           | 3CP                  |    |
| 1                                                    | 943648 | MW 19.00-21.00                            | GRES      | 307                  |    |
| MATH                                                 | 127*   | CALC LIFE-SOC SCI I                       |           | 3CP                  |    |
| 1                                                    | 943826 | TUTH 19.00-20.30                          | SBA       | 106                  |    |
|                                                      |        |                                           | E         | 3CP                  |    |
|                                                      |        |                                           | GRES      | 307                  |    |

| DEPT                                                                                                                                                                                                 | COURSE | SCHEDULE             | TITLE     | CORE                | CR                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------|-----------|---------------------|---------------------|
| SEC                                                                                                                                                                                                  | NUMBER | MEETING TIMES        | BLOG ROOM |                     |                     |
| <b>M-A-N-A-G-E-M-E-N-T</b>                                                                                                                                                                           |        |                      |           |                     |                     |
| MGT                                                                                                                                                                                                  | 201*   | PRINCIPLES OF MGT    |           | 3CP                 |                     |
| 1                                                                                                                                                                                                    | 944181 | TH 19.00-22.00       | SBA       | 103                 |                     |
| MGT                                                                                                                                                                                                  | 214*   | PERSONNEL MANAGEMENT |           | 3CP                 |                     |
| 1                                                                                                                                                                                                    | 944393 | M 19.00-22.00        | SBA       | 103                 |                     |
| MGT                                                                                                                                                                                                  | 230*   | MANAGERIAL BEHAVIOR  |           | 3CP                 |                     |
| 1                                                                                                                                                                                                    | 944571 | TU 19.00-22.00       | SPA       | 107                 |                     |
| MGT                                                                                                                                                                                                  | 231*   | ADMIN THEORY         |           | 3CP                 |                     |
| 1                                                                                                                                                                                                    | 944602 | TU 19.00-22.00       | HLKY CC   | A340                |                     |
|                                                                                                                                                                                                      |        |                      | SBA       | 106                 |                     |
|                                                                                                                                                                                                      |        |                      | SBA       | 106                 |                     |
| <b>M-A-R-K-E-T-I-N-G</b>                                                                                                                                                                             |        |                      |           |                     |                     |
| MKTG                                                                                                                                                                                                 | 201*   | FUND OF MKTG         |           | 3CP                 |                     |
| 1                                                                                                                                                                                                    | 944961 | TU 19.00-22.00       | SBA       | 109                 |                     |
| MKTG                                                                                                                                                                                                 | 210*   | BUYER BEHAVIOR       |           | 3CP                 |                     |
| 1                                                                                                                                                                                                    | 945179 | W 19.00-22.00        | SPA       | 107                 |                     |
| MKTG                                                                                                                                                                                                 | 225*   | SALES MANAGEMENT     |           | 3CP                 |                     |
| 1                                                                                                                                                                                                    | 945357 | M 19.00-22.00        | SBA       | 106                 |                     |
| <b>M-U-S-I-C</b>                                                                                                                                                                                     |        |                      |           |                     |                     |
| MUSIC                                                                                                                                                                                                | 101*   | APPRECIATION-INTRO   |           | C                   | 3CP                 |
| 1                                                                                                                                                                                                    | 945535 | M 19.00-22.00        | FAC       | 154                 |                     |
| <b>N-U-R-S-I-N-G</b>                                                                                                                                                                                 |        |                      |           |                     |                     |
| NURSE                                                                                                                                                                                                | 340*   | LEADERSHIP IN NURSNG |           | 3CP                 |                     |
| 1                                                                                                                                                                                                    | 945713 | TU 19.00-22.00       | SFLO      |                     |                     |
| NURSE                                                                                                                                                                                                | 391A   | SEM-MOD PATIENT TCH  |           | 3CP                 |                     |
| 91                                                                                                                                                                                                   | 945894 | TU 19.00-22.00       | MOR4      | 404                 |                     |
| NURSE                                                                                                                                                                                                | 391B   | SEM-COMM IN NURSING  |           | 3CP                 |                     |
| 91                                                                                                                                                                                                   | 946078 | W 19.00-22.00        | MOR4      | 404                 |                     |
| NURSE                                                                                                                                                                                                | 391C   | SEM-COMM HEAL PROB   |           | 3CP                 |                     |
| 91                                                                                                                                                                                                   | 946256 | BY ARRG              | Spfld     |                     |                     |
| <b>NOTE: The specific locations of those Nursing courses to be offered in Springfield has not been confirmed. This information will be available by the time In-Person Registration takes place.</b> |        |                      |           |                     |                     |
| <b>P-H-I-L-O-S-O-P-H-Y</b>                                                                                                                                                                           |        |                      |           |                     |                     |
| PHIL                                                                                                                                                                                                 | 105*   | INTRO TO PHIL        |           | C                   | 3CP                 |
| 1                                                                                                                                                                                                    | 946434 | TU 19.00-22.00       | HERT      | 119                 |                     |
| PHIL                                                                                                                                                                                                 | 110*   | INTO TO ETHICS       |           | C                   | 3CP                 |
| 1                                                                                                                                                                                                    | 946612 | TH 19.00-22.00       | HERT      | 119                 |                     |
| PHIL                                                                                                                                                                                                 | 201*   | PLATO AND ARISTOTLE  |           | C                   | 3CP                 |
| 1                                                                                                                                                                                                    | 946793 | W 19.00-22.00        | HERT      | 211                 |                     |
| <b>P-H-Y-S-I-C-S</b>                                                                                                                                                                                 |        |                      |           |                     |                     |
| PHYSIC                                                                                                                                                                                               | 100*   | AN INTRO TO PHYSICS  |           | E                   | 3CP                 |
| 1                                                                                                                                                                                                    | 946971 | TU 19.00-22.00       | HAS       | 107                 |                     |
| <b>P-L-A-N-T P-A-T-H-O-L-O-G-Y</b>                                                                                                                                                                   |        |                      |           |                     |                     |
| PLPATH                                                                                                                                                                                               | 100*   | PLANT DIS & CONTROL  |           | 3CP                 |                     |
| 1                                                                                                                                                                                                    | 947155 | W 19.00-22.00        | FERN      | B-1                 |                     |
| <b>P-L-A-N-T &amp; S-O-I-L S-C-I-E-N-C-E-S</b>                                                                                                                                                       |        |                      |           |                     |                     |
| PLSOIL                                                                                                                                                                                               | 100*   | BASIC PLANT SCIENCE  |           | E                   | 3CP LAB FEE: \$6.00 |
| 1                                                                                                                                                                                                    | 947333 | M 19.00-22.00        | FREN      | 209                 |                     |
| PLSOIL                                                                                                                                                                                               | 190X   | HOME LAND MAINT      |           | 3CP LAB FEE: \$5.00 |                     |
| 91                                                                                                                                                                                                   | 947511 | TU 19.00-22.00       | FREN      | 209                 |                     |
| PLSOIL                                                                                                                                                                                               | 205*   | SMALL FRUIT TECH     |           | 3CP LAB FEE: \$4.00 |                     |
| 1                                                                                                                                                                                                    | 947692 | W 19.00-22.00        | FREN      | 209                 |                     |
| <b>P-O-L-I-S-H</b>                                                                                                                                                                                   |        |                      |           |                     |                     |
| POLISH                                                                                                                                                                                               | 290C   | INTPO TO POLISH PEOP |           | 3CP                 |                     |
| 91                                                                                                                                                                                                   | 947870 | W 19.00-22.00        | HERT      | 225                 |                     |
| <b>P-O-L-I-T-I-C-A-L S-C-I-E-N-C-E</b>                                                                                                                                                               |        |                      |           |                     |                     |
| POLSCI                                                                                                                                                                                               | 223*   | PUB ADMINISTRATION   |           | D                   | 3CP                 |
| 1                                                                                                                                                                                                    | 948054 | W 19.00-22.00        | HERT      | 212                 |                     |
| POLSCI                                                                                                                                                                                               | 226*   | POL THRY & PUB POLCY |           | D                   | 3CP                 |
| 1                                                                                                                                                                                                    | 948232 | TH 19.00-22.00       | HLKY CC   | A340                |                     |
| POLSCI                                                                                                                                                                                               | 260*   | CONSTITUTIONAL LAW   |           | D                   | 3CP                 |
| 1                                                                                                                                                                                                    | 948410 | TU 19.00-22.00       | HERT      | 206                 |                     |
| <b>P-S-Y-C-H-O-L-O-G-Y</b>                                                                                                                                                                           |        |                      |           |                     |                     |
| PSYCH                                                                                                                                                                                                | 101*   | ELEMENTARY PSYCH     |           | D                   | 3CP LAB FEE: \$2.00 |
| 1                                                                                                                                                                                                    | 948591 | M 19.00-22.00        | TOAN      | 622                 |                     |
| PSYCH                                                                                                                                                                                                | 141*   | PSYCH MTHOS          |           | D                   | 3CP LAB FEE: \$5.00 |
| 1                                                                                                                                                                                                    | 948800 | TU 19.00-22.00       | BART      | 66                  |                     |
| PSYCH                                                                                                                                                                                                | 210*   | SENSATION & PERCEP   |           | D                   | 3CP LAB FEE: \$1.00 |
| 1                                                                                                                                                                                                    | 948981 | W 19.00-22.00        | BART      | 35                  |                     |
| PSYCH                                                                                                                                                                                                | 260*   | CHILD BEHAV & DEVEL  |           | D                   | 3CP LAB FEE: \$2.00 |
| 1                                                                                                                                                                                                    | 949165 | TH 19.00-22.00       | TCBN      | 622                 |                     |
| PSYCH                                                                                                                                                                                                | 280*   | SOCIAL PSYCHOLOGY    |           | D                   | 3CP LAB FEE: \$1.00 |
| 1                                                                                                                                                                                                    | 949343 | TU 19.00-22.00       | TCBN      | 622                 |                     |
| PSYCH                                                                                                                                                                                                | 365*   | THEOR & PRACT COUNSL |           | D                   | 3CP LAB FEE: \$2.00 |
| 1                                                                                                                                                                                                    | 949521 | W 19.00-22.00        | TOAN      | 622                 |                     |
| PSYCH                                                                                                                                                                                                | 391J   | SEM-COMM MNTL HEALTH |           | D                   | 3CP                 |
| 91                                                                                                                                                                                                   | 949709 | W 19.00-22.00        | HLKY CC   | A340                |                     |

| DEPT                     | COURSE | SCHEDULE | TITLE                 | CORE CR   |
|--------------------------|--------|----------|-----------------------|-----------|
|                          | SEC    | NUMBER   | MEETING TIMES         | BLOG ROOM |
| <b>R-H-E-T-O-R-I-C</b>   |        |          |                       |           |
| RHET                     | 100C   |          | RHET OF LANG AND WR   | B 3CR     |
|                          | 91     |          | 949880 M 19.00-22.00  | HEAT 110  |
| RHET                     | 110A   |          | LANGUAGE & SPEAKING   | B 3CR     |
|                          | 91     |          | 950069 TU 19.00-22.00 | HEAT 110  |
| <b>S-O-C-I-O-L-O-G-Y</b> |        |          |                       |           |
| SOCIOL                   | 105*   |          | SELF, SOC & INTER REL | D 3CR     |
|                          | 1      |          | 950247 W 19.00-22.00  | HEAT 217  |
| SOCIOL                   | 224*   |          | HIGHER ED             | D 3CR     |
|                          | 1      |          | 950425 TH 19.00-22.00 | HEAT 209  |
| SOCIOL                   | 246*   |          | SOCIAL MOVEMENTS      | D 3CR     |
|                          | 1      |          | 950603 TU 19.00-22.00 | HEAT 207  |
| SOCIOL                   | 250*   |          | DEVIANCE & SOC ORDER  | D 3CR     |
|                          | 1      |          | 950784 TH 19.00-22.00 | HEAT 207  |
| SOCIOL                   | 292*   |          | SOCIAL WELFARE        | D 3CR     |
|                          | 1      |          | 950962 M 19.00-22.00  | HEAT 205  |
| <b>S-P-A-N-I-S-H</b>     |        |          |                       |           |
| SPAN                     | 110*   |          | ELEMENTARY SPANISH    | 3CR       |
|                          | 1      |          | 951146 W 19.00-22.00  | HEAT 222  |

| DEPT                             | COURSE | SCHEDULE | TITLE                 | CORE CR                |
|----------------------------------|--------|----------|-----------------------|------------------------|
|                                  | SEC    | NUMBER   | MEETING TIMES         | BLOG ROOM              |
| <b>S-T-A-T-I-S-T-I-C-S</b>       |        |          |                       |                        |
| STATIS                           | 121*   |          | ELEM STATISTICS       | E 3CR                  |
|                                  | 1      |          | 951324 W 19.00-22.00  | GRES 311               |
| <b>W-O-M-E-N-S S-T-U-D-I-E-S</b> |        |          |                       |                        |
| WOST                             | 190*   |          | INTRO TO WOMENS STUD  | 3CR                    |
|                                  | 1      |          | 951502 M 19.00-22.00  | HLYK GC A340           |
| WOST                             | 290C   |          | ENG WOMEN 1815-1914   | 3CR                    |
|                                  | 91     |          | 951683 TU 19.00-22.00 | HEAT 210               |
| <b>Z-O-O-L-O-G-Y</b>             |        |          |                       |                        |
| ZOOL                             | 101*   |          | INTRO ZOOLOGY         | E 3CR LAB FEE: \$10.00 |
|                                  | LEC 1  |          | 951861 TU 19.00-21.00 | MOR4 201               |
|                                  | LAB 1  |          | 951895 TH 19.00-22.00 | MOR4 336               |
| ZOOL                             | 286A   |          | SCIENTIFIC ILLUS      | 3CR LAB FEE: \$3.00    |
|                                  | 91     |          | 952079 TH 19.00-22.00 | MOR4 201               |

NOTES....



## PROGRAM ALTERNATIVES

The Division of Continuing Education, in association with the University of Massachusetts/Amherst, offers both credit and credit-free learning experiences to adults who are interested in continuing their education. While activities of the Division can range from one-day intensive learning seminars to degrees for working professionals who want to pursue their education on a part-time basis, all the learning experiences provided by the Division have, in common with University courses, high academic standards.

Because the adult learner pursuing an education on a part-time basis does not have ready access to the informal support and information sources available to full-time students on the University campus, the Division's Student Services staff of trained professionals are available to provide academic counseling and information referral to Continuing Education students. These professionals help students design transdisciplinary degree programs, investigate specialized educational resources both on and off campus, and arrange for credit by examination or for prior experience when appropriate.

Perhaps the most valuable asset of the Division of Continuing Education is its recognition of the need to integrate the adult students's learning experiences with his or her on-going professional workday activities. The adult learner is a demanding and time conscious student who will not accept less than top quality from professionals who know their field and are able to communicate their expertise efficiently and effectively. The Division prides itself on its ability to satisfy the educational needs of a quality-conscious adult clientele by designing and delivering educational programs that respond to students' needs.

### The Continuing Education Unit

The Division of Continuing Education offers a number of programs which provide regular academic credit applicable to a degree, but other programs offered through the Division are designed with ends other than a degree in mind. These programs are designed for in-service training in a particular field of work, whether in industry or the professions.

The Continuing Education Unit provides a record of participation in programs specifically designed for in-service training. One Continuing Education Unit (CEU) represents ten contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction. Any CEU's earned while attending an approved program at the University of Massachusetts will be recorded on student transcripts by the Division of Continuing Education. CEU's are generally transferable from one institution to another.

## ARTS EXTENSION

The Arts Extension Service is a community development program which works to meet the needs of continuing education in the arts. One objective of the AES is to help develop effective and self-sufficient community arts organizations.

Activities include: consulting services in technical and management problems; workshops in community arts management and group dynamics; projects servicing the arts interests and needs of older people, inner city people, rural communities and other special interest groups; maintenance of the Arts Directory, a listing of regional artists; a series of arts seminars and conferences; a booking referral service for artists; Communities to Campus, a program aimed at making UMass/Amherst campus events more available to communities, and "The New England Artists Festival and Showcase", which brings the art and performance talent of western Massachusetts together for a major two-day celebration.

AES also serves as an arts reference center, providing information about and assistance with arts activities and services in western New England.

The Arts Extension Service publishes:

- The Arts Directory
- Arts Festivals; A Work Kit
- The Logo Handbook
- The AES News



For information contact Arts Extension Service, Hills House North, University of Massachusetts, Amherst, MA 01002, (413) 545-2013.

## GREAT DECISIONS

Great Decisions is a nationwide program with worldwide concerns. It is sponsored by the Foreign Policy Association, a national, nonpartisan, nonprofit organization. Though the program has been in operation for 21 years, this is the first time that it will be coordinated on a statewide basis in Massachusetts. Stan Rosenberg of the Division of Continuing Education will be responsible for coordination, which will include help with materials, hints on how to organize groups and acting as distributor of the FPA booklets to be used in the program.

Great Decisions involves the formation of informal community-based discussion groups, operating autonomously and at an appropriate level and pace. These groups will provide the means by which individuals can explore perspectives on eight key issues of importance to the U.S. and the world. This year, the eight issues are: Arab vs. Israelis; Our Mediterranean Commitments; Latin America and the U.S.; Asia After the Vietnam War; The American Dream Among Nations; The U.S. in the World Economy; India; and Rethinking U.S. Foreign Policy.

For more information about the statewide coordinating effort, or for help in planning a group or participating in one, contact Lin Maria Riotto, Division of Continuing Education, Hills North, UMass/Amherst, phone (413) 545-3410. For registration information see ad in this catalog.

## LIBRARY SCIENCE PROGRAM

The Division of Continuing Education, by arrangement with the University of Rhode Island, offers Library Science courses each semester which may be applied to a University of Rhode Island Master's degree in Library Science.

The MSLS degree requires 36 hours of credit, including six hours of electives. Half of the requirements for the degree may be completed through extension before the participant continues in residence at the University of Rhode Island's campus in Kingston. In order to be eligible for the degree program, students must possess a Bachelor's degree from an accredited college or university with an average of B or better. It is not necessary to be enrolled in the full degree program to receive credit for the courses, although a Bachelor's degree is still required.

Persons interested in further information about application procedures for the full degree program should contact the Dean's Office, Graduate Library School, University of Rhode Island, 74 Lower College Road, Kingston, R.I. 02881, telephone (401) 792-2947. Registration for individual Library Science courses is done through the Division of Continuing Education.

### Fall 1976 Library Science Courses

#### LSC 505\* Cataloging and Classification

Introduction to the principles and practices of descriptive and subject cataloging and classification, using the Dewey Decimal classification and Sears subject headings. Introduction to the Library of Congress classification. Emphasis is on books and book-like materials in libraries of various kinds. Tuesday, 7-9:30 p.m. Fay Cipkowitz. Three credits. Course Fee: \$140.

#### LSC 528\* Multi-Media and the Library

The role of A-V materials in media centers and other types of libraries. Prerequisite: LSC 520. Tuesday, 4-6:30 p.m. James Kenny. Three credits. Course Fee: \$140.

\*All Library Science courses are listed in the **Schedule of Courses** under CONTED. For registration purposes, use the **Schedule of Courses** for course names and registration numbers.

## TEACHER EDUCATION PROGRAM

The Division of Continuing Education in cooperation with the Teacher Education Council (TEC) of the School of Education, offers a program for post-baccalaureate students that leads to teacher certification in elementary and secondary education. Most of the Teacher Education Programs require a two semester commitment. Coursework is taken the first semester and student teaching is completed the second semester. Unfortunately, we do not have a summer program at this time. It should be noted that this is *not* a graduate program. It is designed *only* for teacher certification.

### Teacher Education Programs

|                                               |                                     |
|-----------------------------------------------|-------------------------------------|
| Agricultural Education                        | Home Economics                      |
| Amherst Pelham Elementary Program             | Human Services                      |
| Bilingual Bi-Cultural Education               | Integrated Day Model                |
| Boston-English Project (Secondary)            | International Education             |
| Early Childhood Education                     | Mathematics                         |
| Education Through Work                        | Music                               |
| Elementary Education                          | New Mexico Cross-Cultural Education |
| English                                       | Off-Campus, England                 |
| Environmental Education                       | Physical Education                  |
| Explorations! (Individually Designed Program) | Russian                             |
| Future Studies                                | Science                             |
| German                                        | Social Studies                      |
|                                               | Spanish                             |
|                                               | Urban Education                     |

### Admission

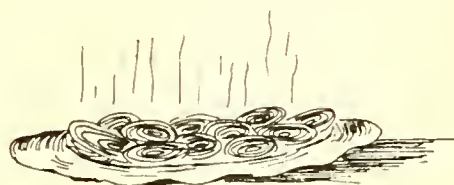
In order to enroll in any certification program, all applicants must have a bachelor's degree and must be selected by the Coordinator of Post-Baccalaureate Programs as well as by the programs for which they are applying. Applicants need: (1) a formal application form, (2) two letters of recommendation, (3) official transcripts, (4) interview by the Coordinator of Post-Baccalaureate Programs.

During the interview, applicants should determine the amount of course work required and student teaching site information. Once applicants have been formally accepted to specific programs, they must return to the Coordinator for finalizing the admissions process and for registration counseling.

### Registration and Fees

Registration and fees are handled through the Division of Continuing Education. The course fee is \$105 per three-credit course plus the usual registration fees. Students enrolling in this program will be governed by the administrative policies of the Division of Continuing Education; all academic policies and standards of the University and the School of Education will apply.

Can you say,  
"No onions, please,"



in French, Italian,  
Spanish or German?

Credit-Free language workshops will help you get along in a foreign country. These workshop descriptions begin on page 36.



## Program Application

For further information and an application form, write to Bernadine Freese, Division of Continuing Education, University of Massachusetts, Amherst, Massachusetts, 01002. Application deadline, April 1 for fall semester and November 1 for spring semester. Late applications will be considered on a space-available basis.

## Second Bachelor's Degree Program

The purpose of the Second Bachelor's Degree Program is to offer to those students who have earned a bachelor's degree the opportunity to do *part-time*, undergraduate study in a field unrelated to previous degree studies. The program is available: 1) as a route for those students who want to complete a prerequisite, undergraduate major in an area different from their first bachelor's degree study in preparation for graduate studies; or 2) as a route for those students who do not need to do graduate studies in order to meet job/career requirements or changes, but who do require additional education.

Write to Bernadine Y. Freese, Coordinator, Post-Baccalaureate Programs, Continuing Education, 105 Hills North, UMass., Amherst, 01002 for counseling and application.

The deadlines for applying are October 1 for the Spring and March 15 for the Fall. Late applications will be considered on a space-available basis. All academic policies and standards of the University, as well as the Division of Continuing Education, will apply.

## TECHNICAL GUIDANCE CENTER

The Technical Guidance Center for Environmental Quality functions as an environmental outreach program providing educational resources to the general public. These resources include books, periodicals, and governmental reports, as well as film listings and directories on the Center's areas of interest which focus on pollution, energy sources and conservation, natural resources development and environmental standards and controls.

The Center also provides information services, its own publication, *TGC Bulletin*, and a regular radio program, *environmental Monitor*, broadcast over station WFCR, 88.5 FM, Tuesdays at 12:45 p.m.

The Technical Guidance Center is developing a series of community environmental programs for children and adults. Offerings will provide a better understanding of how environmentally related decisions affect all of us. The emphasis will be action oriented in an attempt to equip citizens and community groups with ways to interact responsibly in the decisionmaking process. Subject areas will include: Policy and Future Alternatives, Assessing Science and Technology, Environmental Studies for Children, Ecological Principles Simplified, Strategies for Citizen Participation, and the Function of Conservation.

Other activities of the Technical Guidance Center are work-related programs to be designed to advance competence in special areas of concern in response to the needs of professionals. A survey of in-service teachers is being conducted to prepare for the offering of courses in environmental studies appropriate to teachers' needs. In addition, workshops and symposia will focus on timely topics relevant to changes

in environmental fields.

The Technical Guidance Center is located at 317 and 321 Hills North, University of Massachusetts, Amherst, Massachusetts, 01002, or phone (413)545-0347.

## WINTERSESSION

For the past four years, the Division has supplemented the University's programming during the interim period between fall and spring semesters, a period now called Wintersession. Next winter, the Division will offer a small number of both credit courses and credit-free workshops during a three week period from January 3 to 21. The Wintersession catalog will be ready during the fall, 1976, semester. Interested students may write to: Wintersession, 1977, Box 835, Amherst, MA 01002.



# CREDIT-FREE WORKSHOP PROGRAM

*The Credit-Free Workshop Program is a series of workshops offered by the Division of Continuing Education specifically for persons interested in expanding their skills, furthering their careers, improving their community life, or partaking of the expertise offered by others, usually experts and teachers in their fields. The workshops are for those for whom academic credit is not a priority.*

## Admissions

The Division of Continuing Education has an open admissions policy with regard to the Credit-Free Workshops it offers. Interested persons may enroll for as many workshops as they wish without concern for their educational background.

### Sixty-five and Over Policy

Persons aged 65 and over may register, free of charge, on a space-available basis, for any Credit-Free Workshop. Please call the Records Office, 545-3653, for further information.

## Mail Registration

To register by mail complete the workshop registration form included in this publication, and mail with full payment to:

Credit-Free Workshops, AE76-30  
Division of Continuing Education  
P.O. Box 835  
Amherst, MA 01002

Make checks payable to: Continuing Education, AE76-30. In addition to the workshop fee, all registrations must include a \$5 registration fee, charged once. When registration meets the minimum number, registrants will be notified immediately by mail with a class card which includes notice of the meeting place.

## In-Person Registration

After September 17, walk-in registrations will be accepted on a space-available basis. Come to the Continuing Education Records Office located in the lobby of Hills House. Office hours are:

*Monday-Thursday, 8:30 a.m.-7 p.m.*

*Friday, 8 a.m.-5 p.m.*

*Saturday, 10 a.m.-1 p.m.*

Enrollment in all workshops is limited to a number that is manageable and acceptable to each instructor, therefore early registration is encouraged. When requests for a workshop exceed the number to be enrolled, the Division will attempt to arrange for an additional section. Names of registrants will be placed on a waiting list in the order in which they are received.

## Fees

Credit-Free Workshops are self-funding and, in general, fees have been computed on the basis of the number of contact hours which a workshop meets. In order to make each workshop self-supporting, a minimum number of enrollments is usually necessary. Fees are included in the workshop descriptions beginning on the next page.

## Refund and Withdrawal

Full refund will be made by mail if a workshop is cancelled due to underenrollment.

If a student wishes to withdraw from a workshop, the Records Office must be notified in writing by mail, or in person during the regular office hours. Notifying the instructor or ceasing to attend class does not constitute official withdrawal. There will be an 80% refund for official withdrawal *after* the first workshop meeting and *before* the second meeting. There will be a 60% refund after the second workshop meeting, and before the third. After the third workshop meeting, there will be no refund.

### Refund Schedule

#### After:

|                |           |
|----------------|-----------|
| First meeting  | 80%       |
| Second meeting | 60%       |
| Third meeting  | NO REFUND |

### Exceptions

There are NO REFUNDS for workshops with schedules covering less than three weeks unless withdrawal is effected prior to the beginning of the workshop. In cases of withdrawal prior to the beginning of a workshop, a full refund will be processed once the Records Office is notified in writing or in person.

## Cancellations

The Division of Continuing Education reserves the right to cancel, postpone, or combine workshops and to change instructors.

## Workshop Locations

Workshops will take place in Amherst. Exact locations will be announced by mail once students have registered.

## Reading Material

Reading material information may be obtained from the instructor on the first night of the workshop. Required books may be obtained at the University Textbook Annex; for hours, see **Textbooks** in this catalog.

## Supplies

Some workshops require supplies which are to be paid for by each participant if he or she chooses to have them. The estimated cost of these supplies is listed at the end of the workshop description. Since expense money is estimated and optional, it is not to be included in workshop and registration fees, and students should not pre-pay.

CREDIT-FREE REGISTRATION  
FORM MAY BE FOUND ON  
PAGE 22, IN THE CENTER  
SECTION OF THIS CATALOG.

## CREDIT-FREE WORKSHOP CALENDAR

|          |                  |                                                                            |
|----------|------------------|----------------------------------------------------------------------------|
|          | July 12-Sept. 17 | Mail Registration                                                          |
|          | After Sept. 17   | Walk-In Registration<br>(space-available basis)                            |
| Monday   | Sept. 27         | Workshops begin (unless<br>otherwise noted in the<br>workshop description) |
| Monday   | Oct. 11          | Holiday-Columbus Day                                                       |
| Thursday | Nov. 11          | Holiday-Veterans' Day                                                      |
| Tuesday  | Nov. 16          | Thursday workshop schedule<br>will be followed                             |
| Saturday | Nov. 20          | Thanksgiving holiday week<br>begins after last class                       |
| Monday   | Nov. 29          | Workshops resume                                                           |
| Tuesday  | Dec. 14          | Workshops end (Workshop<br>schedules vary—consult<br>Workshop Description) |

# WORKSHOPS

## ARTS & CRAFTS

### Cartoon Art

**Brian Turner: Cartoonist**

Development of style and technique in graphics, and story-telling in comics and cartooning. Differences among political, underground, gag, parody, strip, and other forms. Explication of history and recent technical/artistic developments. Use of tools, marketing, and some attention to animation, children's illustration, etc., as requested by participants. Recommended reading: Steranko, *History of the Comics*; and J. Robinson, *Comics*. Ten weeks, Monday, 7-10 p.m., \$60.

### Circus Arts

**Hemlock Robinson: Professional Performer**

Develops abilities in the field of circus arts with focus on exercise, juggling, mime, and character development. Develops individual's ability to integrate and perform acquired skills; critiques; possible group show at the end of the workshop. Ten weeks, Monday, 7-9 p.m., \$40.

### Colonial Restoration and Interior Decorating Ideas

**Stephen A. Olivo, Jr./Victoria L. Olivo: Contractor, Interior Designer**

Restoration and interior decorating with a personal emphasis. The why's, how's, and what's of recreating the look of colonial times in a workable, modern lifestyle. Field trips to homes restored by the instructors achieve a closer look at reasonably authentic and affordable restoration. Students learn the key to imaginative but simple Early American decorating, and the textures, moods, and settings of Colonial New England. Ten weeks, Thursday, 7-9 p.m., \$40.

### Crewel and Creative Stitchery

**Agnes Moustakis: Certified Teacher of Needlework**

Techniques of transferring patterns and use of 20 different

stitches (advanced stitches for advanced students). Color, balance, and design stressed. Application to a selected piece carried through to blocking and completion. Expenses are \$8-\$12. Ten weeks, Tuesday, 7-10 p.m., \$60.

### Matting and Mounting Fine Art Work

**Betsy Morris: M.F.A.**

Choosing the color, texture, and size of a mat or mount for drawings, photographs, prints, watercolors, and other works, and then cutting and assembling the finished work. Participants hear lecture and demonstration at first meeting; prepare art mat or mount at second meeting. Expenses are \$5. Two weeks, Saturday, 9:30-11 a.m., \$6.

### Patchwork: A Busy Person's Approach

**Victoria Olivo: Designer**

The use of patchwork in making quick, inexpensive changes in one's home and clothing in minimum amount of time. Includes patchwork quilts that can be sewn in two weeks; pillows, pot holders, samplers, and other small color spots for the home; and application of calico on clothing using recycled material such as denim. Knowledge of sewing machine necessary. Three weeks, Tuesday, 7-9 p.m., \$12.

### Pottery

**Fred Englander: Potter**

Introduces use of the potter's wheel and handbuilding techniques; discussion of clay and glaze chemistry. Stoneware clay and glazes fired in a reduction atmosphere to cone 10. Includes opportunity to fire eight pots. Additional pots may be fired for a minimal fee. Expenses are \$5. Ten weeks, Tuesday and Thursday, 7:30-9:30 p.m., \$80.

### Upholstery

**Walter Rupp: Upholsterer**

Students learn step by step reupholstering procedure of typical piece of furniture. Demonstrations enable students to work independently. Questions and problems handled on an individual basis. Expenses are \$10. Ten weeks, Wednesday, 6:30-9:30 p.m., \$60.

## CULTURING THE MIND - BODY

### Buddhist Insight Meditation

**Eric Lerner: B.A. Harvard, Sanskrit and Indian Philosophy; Writer; Meditator**

Insight meditation is neither a religion, nor a philosophy. Through the development of powerful concentration, Insight Meditation enables the student to experience first-hand the ever-changing nature of the self, leading to a state of non-judgement and non-reaction. Equanimity and freedom from compulsion allow being in the present moment totally. Like Zen but exercises are more concrete. Theory is taught only as it relates to actual practice. Recommended reading: Nyanaponika Thera, *The Heart of Buddhist Meditation*, Samuel Wiser Co., N.Y. Ten weeks, Tuesday, 7-10 p.m., \$60.

### Creative Movement

**Deborah Waldron**

Includes improvisation, alignment, relaxation exercises, dance therapy, massage, and physiology. Feel better, stronger and stretch out. Designed for the individual who wants to feel a balanced energy in the self and in relation to others. Recommended readings: G. Downing, *The Massage Book*; and M. Todd, *The Thinking Body*. Ten weeks, Wednesday, 7-9 p.m., \$40.



**The Tarot: An Introduction to its Psychology and Symbolism****Paul Zelle: M.Div., M.A.**

Basic techniques of meditation using the archetypal Tarot card symbols. Detailed analysis of the Tarot symbols and their relationship to everyday life. History of the Tarot, modern profane practices, such as fortune telling, and current misconceptions. Students make Tarot cards. Expenses are \$3 for cards. Ten weeks, Tuesday, 7-9 p.m., \$40.

**Yoga (Hatha) and Beyond: Beginning****Yael Ariel**

The Yoga system of health through physical and mental disciplines is designed to help improve body fitness and appearance as well as body awareness. Work with the body as a whole, concentrating on each individual part; and learn how to integrate Hatha Yoga into life to enhance health, fitness, and general feelings of well being. Eight weeks, Monday, 6:30-8 p.m., \$30.

**Yoga (Hatha) and Beyond: Intermediate****Yael Ariel**

Brings students to their best possible performance of the Yoga postures. Develops deeper understanding of the body and its behavior, and integrates Yoga into life to enhance health, fitness, and general feelings of well-being. New postures and meditation. Prerequisite: Yoga I. Eight weeks, Tuesday, 6:30-8 p.m., \$30.

**EAST WEST INTEGRAL STUDIES**

*The East West Integral Studies Program is a group of workshops designed to be a means of sharing knowledge and skills with one another. Presented in Amherst by the Division of Continuing Education in association with the East West Foundation, located in Boston, the Integral Studies Program covers a broad range of subjects from both East and West, including practical study and experience, along with the underlying principles and theory. It is our hope that the Integral Studies Program will help provide the understanding and practical means for the creation of health, happiness, and freedom through the development of a wholistic view of life.*

**Acupuncture Massage: Introduction****Ken Burns: Specialist in Oriental Medicine and Philosophy, Teacher of Shiatsu Massage and Acupuncture Massage, East West Foundation**

Acupuncture (Shiatsu, or finger pressure) massage, unlike Swedish massage, aims at treating illness or imbalance within the body by re-adjusting the flow of ki or life energy along the acupuncture points and meridians. Requires no specialized knowledge or instruments, and has been commonly practiced in the Orient for thousands of years. Workshop covers basic oriental methods of diagnosis and how to locate important points. Students learn to give a complete massage. Suggested reading: Michio Kushi, *Acupuncture and Ancient and Future Worlds*; George Ohsawa, *Acupuncture and the Philosophy of the Far East*; Ilza Vieth, *The Yellow Emperor's Classic of Internal Medicine*. Eight weeks, Monday, 6:30-9:30 p.m., \$50.

**Acupuncture Massage: Intermediate****Ken Burns**

Offered for those who completed the introductory course in Massage presented at UMass. Presents refinement of massage technique, preparing students to practice and teach the

art of Massage. Recommended reading: same as for beginning workshop. Prerequisite: completion of Acupuncture Massage I. Eight weeks, Tuesday, 6:30-9:30 p.m., \$50.

**Macrobiotics and Oriental Medicine: Introduction****Rod House: M.A., Art Education; East West Foundation**

Basic introduction to several areas of macrobiotics and oriental medicine: principle and application of Yin and Yang cosmology to phenomena on several levels; principles of diet and daily food; ecology, including the relationship of natural agriculture, wild plants, specific environment and its relationship to man; acupuncture, how and why it works, specifically Shiatsu, the art of hand-finger-foot pressure on points; general classification of major diseases and dietary relationship; introduction to consciousness, perception and creative preception; visual diagnosis; general introduction to "Do-In" (Self Massage) and Te Ate (Palm Healing). Recommended reading: Michio Kushi, *Teachings of Michio Kushi*, Volumes I and II. Eight weeks, Thursday, 6:30-9:30 p.m., \$50.

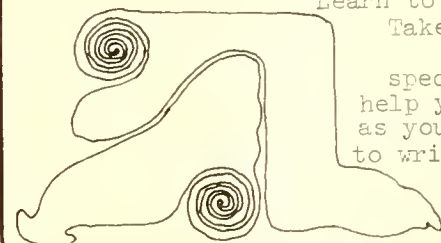
**Macrobiotic Cooking: Introduction****Janet Sadler: East West Foundation**

The practice of macrobiotic cooking reflects that health, spirituality and happiness depend on the quality of blood, and that is in turn determined by daily food. Introduces preparation of whole, natural foods. Emphasis on the balance of yin and yang in everyday eating, from season to season and for individual needs. Instructor demonstrates the use of basic, traditional foods in grain, bean/vegetable, soup, bread and dessert dishes for varied, delicious everyday meals. Recommended readings: Abehsera, *Cooking for Life*; Farmilant, *Macrobiotic Cooking*; Ohsawa, *The Art of Just Cooking*; Teeguarden, *Freedom Through Cooking*. Eight weeks, Saturday, 10 a.m.-1 p.m., \$50.

**Oki Yoga****Chuck Brummer: East West Foundation; Oki Yoga Institute**

Introduces students to Oki Yoga's practical methods of mind-body development and natural healing based on ancient Oriental philosophy. Various physical and mental exercises designed for relaxing, strengthening and purifying the body and mind are demonstrated and practiced. Includes how to correct poor posture, heal disease and eliminate tension, fatigue and worry through yoga practice. Zen meditation is investigated and Zen techniques are practiced. Traditional yoga postures and deep breathing as well as Hara (the body's central balance point) exercises included. Recommended readings: W. Durkh. *Hara*; Masahiro Oki, *Practical Yoga*. Eight weeks, Saturday, 9 a.m.-12 noon, \$50.

## Get acquainted with the writer inside you.



Learn to write well.  
Take a workshop  
designed  
specifically to  
help you to write  
as you were meant  
to write. See its  
description  
on page 37.



**The Art of Palm Healing and "Do-In" (Self Massage)****Woods Johnson: East West Foundation**

Covers the formation of the body and its organs. Includes larger influences, such as the constellations and the universal spirals that create us. Diagnosis of major and minor illnesses with the simple and practical practice of Palm Healing and "Do-In". Relationships between the shape of the human body and external phenomena. Recommended readings: Michio Kushi, *Teachings of Michio Kushi*, Volume I; Jacques de Langre, *The First Book of Do-In*. Eight weeks, Thursday, 6:30-9:30 p.m., \$50.

**DANCING****Ballet I-II****Ellen Patton: Dance Major; University Dancers**

Beginning ballet. Advancement includes learning some advanced technique. Attendance stressed. Ten weeks, Tuesday and Thursday, 7-8:30 p.m., \$60.

**Modern Dance: Beginning****Donna Lee Potter: Dance Major; University Dancers**

Provides awareness of body, increases control, flexibility and stamina through the Alwin Nikolais dance technique. Focus is on discipline and pure enjoyment of movement. No previous dance training necessary; consistent attendance encouraged. Ten weeks, Monday and Wednesday, 7-8:30 p.m., \$60.

**Tap Dancing: Beginning****Janny Densmore: Performer**

For those who have had little or no tap-dancing experience. No special talents are necessary, because anyone who wants to can learn to tap dance. Basic steps of tap are combined into routines. Emphasis on moving in rhythm to musical selections from the 30's and 40's. Open to all prepared for vigorous fun. Expenses are \$3-\$10 for taps or tap shoes. Ten weeks, Wednesday, 6-8 p.m., \$40.

**ENVIRONMENT****Alternative Energy: Methane Gas From Waste****Les Auerbach: Author; Consultant**

Focuses on the concepts, ideas and processes necessary to develop an alternative source of energy (methane) as part of a planned, environmentally sound, integrated life support system. Students plan, design and construct a working methane generator. Lectures, discussions and research help students apply theory to individual situations. Expenses are \$10. Ten weeks, Wednesday, 6:30-9:30 p.m., \$60.

**From the Ground Up: Landscaping and Grounds Maintenance for the Homeowner****Susan J. Roy: B.S., Plant and Soil Sciences; Arborist**

Basic horticultural principles in solving common problems that arise when landscaping. Discussions include selection and care of trees and shrubs, lawns, ground covers and mulches, maintenance of plant material, fertilizer and pesticide use, basic pathology and entomology. Not intended as a highly technical course for a practicing landscaper. Includes related topics, such as the physiology of roots, plant growth tendencies and the properties of soil. Ten weeks, Monday, 7:30-9:30 p.m., \$41.

**FOREIGN LANGUAGES: CONVERSATION**

*The following language workshops concentrate on the functional and basic aspects of speaking a foreign language. All are guided by one basic rule: to develop a practical working knowledge of a language, with a view toward getting along in the country of its use. To this end, the fundamental necessities are emphasized, including manners, customs, travel, hotels, and common phrases and expressions. The grammar presented is elementary. No previous knowledge of the language is required, though those with some are also welcome.*

**Conversational French****Elise Jouard Mullen**

Intensive workshop is designed for travelers to French-speaking countries. Ten weeks, Wednesday, 7-9 p.m., \$42.

**Getting Along in German I****Renate Krug v. Nidda: M.A.; Ph.D. Candidate**

Deals primarily with spoken German, with phrases and expressions needed to feel at home in another country. Ten weeks, Wednesday, 6:30-8:30 p.m., \$43.

**Getting Along in German II****George Vaught: Ph.D. Candidate**

Designed for those who have had some German in the past and who want to brush up. Brief review of elementary grammar. Ten weeks, Thursday, 7-9 p.m., \$43.

**Conversational Italian****Anthony Terrizzi: Professor of Italian**

Intensive workshop for travelers to Italy. Required reading: Hall and Bartoli, *Conversational Italian*. Ten weeks, Wednesday, 7-9 p.m., \$40.

**Conversational Spanish****Kathleen MacIntosh: Ph.D. Candidate**

Designed for those who want to learn to read and to understand the language basics. Ten weeks, Monday, 7-9 p.m., \$43.

**INSTRUMENTAL MUSIC****Folk-Guitar Finger-Style: Basic****Vincent Mitchell**

Covers reading guitar music, guitar care, tuning, tablature, basic theory as related to the guitar, chording, various finger-picking styles, and back-up picking, each class featuring a new song from traditional and contemporary folk music. Prerequisite: steady access to guitar and practice time. Ten weeks, Monday, 7-9 p.m., \$42.

**Instrumental Folk-Rag Guitar: Intermediate****Vincent Mitchell**

Delves into fingerpicking arrangements of folk and ragtime songs for guitar: John Hurt, Fahey, Scott Joplin, and others. Includes music reading review, theory, guitar chording system, back-up picking, position scales, listening, playing and basic transcription. Students must know how to read music for guitar, and be familiar with basic chording. Ten weeks, Tuesday, 7-9 p.m., \$42.

## LANGUAGE, LITERATURE & WRITING

### Creative Self-Stimulation for the Writer

**McKinley Moore: M.F.A.**

Deals with the psychology of creativity and the mechanics of writing. Using techniques to explore the senses, the memory, and the associative processes, the writer learns to stimulate and channel experiences into dynamic imaginative complexes. Questions of style, voice, and personality are considered; writings receive in-depth literary evaluations. Ten weeks, Tuesday, 7-9:30 p.m., \$52.

### Grantsmanship

**Nancy Mitiguy: Associated Foundation, Boston**

Although proposal-writing provides the focus, discussions also include program planning, setting objectives, budget preparation and identification of potential funding sources (public and private). Individual needs can be met. In small groups, participants write short proposals and present them for criticism. Participants are asked to bring 15-20 copies of brochures and proposals currently being used by their agencies. Workshop is designed for staff of non-profit agencies and is not applicable to individuals seeking funds for research and scholarships. Ten weeks, Wednesday, 7-9 p.m., \$42.

### Improve Your Handwriting

**Monica M. Knapp: M.S.**

Legible handwriting is one of the essential skills in written communication. Workshop increases legibility in both cursive and manuscript handwriting without sacrificing speed. Some time is spent studying samples of handwriting as clues to personality. Recommended reading: Stephen Kurdsen, *Graphology*. Ten weeks, Monday, 7-8 p.m., \$21.

### Literature and Fiction in Understanding Human Behavior:

#### Going Crazy

**Alfred J. Fortin: M.S.W.; Clinical Social Worker**

Analysis and comparison of different literary pictures of what it is like to go "mad". Includes the perspective of the person who provides understanding of mental and emotional breakdown. One assignment explores students' imagery in the area. Recommended readings: Robert Pirsig, *Zen and the Art of Motorcycle Maintenance*; Sylvia Plath, *The Bell Jar*. Nine weeks, Thursday, 7-9 p.m., \$38. Begins October 7.

### Sign Language and Finger Spelling: Beginning

**Stanley Patrie: Teacher of the Deaf**

Manual communication as used by most deaf people in this country. Includes a brief history of the use of the language of signs, background information on deafness and how it affects those who have been born deaf or lost their hearing later in life. Students converse with totally deaf people, including the instructor, who is also deaf. Required text: Lottie Riekehot, *Talk to the Deaf*, Gospel. Ten weeks, Monday, 7-9 p.m., \$42.

### Sign Language and Fingerspelling: Advanced

**Stanley Patrie**

Helps student become more fluent in both expressive and receptive sign language. Introduces what is known as AMESLAM, a contraction of "American Sign Language", in which facial expression and a certain amount of "body english" play an important part. Ten weeks, Wednesday, 7-9 p.m., \$42.

### Writing for Magazines: How to Earn a Living by Freelance Writing

**Steve Berman: Writer**

Covers entire process of selling, including subtleties of the various writer's markets—everything from *Harpers* and *Atlantic* to the mystery pulp magazines: getting ideas for stories, selling the idea to an editor and the actual writing of the piece. Ten weeks, Monday, 6:30-9:30 p.m., \$62.

### Writing Well

**John Lacey: Professor of English**

For the business, professional, or lay person who wishes to improve his/her ability to write well in everyday situations. Development of individual mode or style of expression, to shape each communication to fulfill its function. Directed to individual problems and difficulties with participants coming to grips with the idea that writing well is possible and necessary in everyday business communications, in professional transactions, and in technical reports. Ten weeks, Saturday, 9 a.m.-12 noon, \$60.

## OUTDOORS

### Hang Gliding: Basic Pilot Training

**Michael J. Morrissey and Robert Stewart: Glider Sports International approved instructors**

Basic pilot (ground and flight) training for foot-launched ultralight aircraft. Includes history and development of foot-launched aviation; aerodynamics; micrometeorology for the glider pilot; safety; maintenance; and actual flight experience. Three classroom sessions of three hours each per student and two flight sessions of four hours each. All equipment furnished. Recommended reading: Bob Skinner and Rich Finley, *Basic Guide to Rogallo Flight*, Flight Realities. On-the-hill flight sessions scheduled at the students' convenience, weather permitting. Optional insurance is \$15. Three weeks, Wednesday, 7-10 p.m., \$65.

### Inflated Structures: For Fun and For Real

**John D. Morrison: Artist**

Introduces inflatable plastic structures as an inexpensive and safe way to build. Includes ways to secure material for building, design, and work on small and medium sized structures. Eventual use extends from camping structures to actual homes. Explores possibilities and ways of wedding arts such as painting, film and photography to a structure that is non-imposing and comfortable. Six weeks, Tuesday, 7:30-9:30 p.m., \$24.

### Technical Rock Climbing: Introduction

**Jock and Lorn Cochran and Tony Contakos: Mistral Mountaineering**

Introduction to technical rock climbing takes place during one classroom session and two full days on the cliff. Indoor work includes knot-tying, belaying and safety system instruction as well as transportation arrangements and general preparation for the weekend. Climbing instruction at Chapel Ledges in South Ashfield develops climbing ability through the demonstration and practice of various techniques: jam, counterforce and friction, climbing various routes, and belaying and rappelling. For anyone 9 years or older; anyone under 16 years must be accompanied by an adult. Hiking or work boots are needed along with transportation and a bag lunch. Dress for weather, rain or shine. Recommended reading: Royal Robbins, *Basic Rockcraft*. Classroom,



Thursday, September 30, 7-10 p.m., UMass campus. Climbing instruction: October 2 and 3, 9 a.m.-4 p.m., South Ashfield, MA. \$40.

#### **Technical Rock Climbing: Intermediate**

**Jock and Lorni Cochran and Tony Contakos: Mistral Mountaineering**

Introduction to rock climbing with more specialized techniques: face climbing, crack climbing, layback and introduction to nut placement. Emphasis on actual climbing. Reviews belaying techniques, climbing calls and safety systems. Designed for those who have had introductory rock climbing course or experience. Recommended readings: Robbins, *Basic Rockcraft* and *Advanced Rockcraft*. Classroom: Thursday, October 14, 7-10 p.m., UMass campus. Climbing instruction: October 16 and 17, 9 a.m.-4 p.m., South Ashfield, MA. \$40.

#### **Tennis From the Beginning**

**Steven M. Rosenthal**

Provides fundamentals of stroke dynamics—balance, coordination, and rhythm. Covers forehand, backhand, and serve. Discusses rules of the game, scoring, and beginners strategy. Open to anyone with a desire to learn and the motivation to practice. Bring a racket, a can of balls, and wear sneakers. Five weeks, Tuesday and Thursday, 5-6 p.m., \$20.

## **PERSONAL GROWTH**

#### **Assertiveness Training for Men and Women**

**Bette H. Taylor: M.Ed.; Ed Bryon: Businessman**

Explores the meanings and consequences of passive, aggressive and assertive behavior. Focuses on situations where non-assertiveness is usual, whether at work or in personal relationships. Male enrollment encouraged as necessary for effective workshop. Saturday, October 2, 9 a.m.-3 p.m.; Tuesday, October 5, 7-10 p.m.; Tuesday, October 19, 7-10 p.m.; Saturday, October 23, 9 a.m.-3 p.m., \$37.

#### **Developing Consulting Skills**

**Robert C. Hawley: Ed.D.; Consultant in Education and Management**

For educational and organizational consultants, and those interested in developing consulting practices in education, organizational development, or the helping professions. Offers activities and guidelines: assessing needs, providing resources, structuring risks, giving feedback, uncovering blocks to effective collaboration, and determining appropriate task and maintenance ratios. Demonstrates avenues to creative problem solving such as brainstorming, synectics, and lateral thinking; techniques for decision-making such as cost-benefit analysis, risk-reward ratios, and decision charting; and group procedures such as role-playing, simulations, revealed difference surveys, and leaderless discussion groupings. Recommended readings: R. Hawley, *Value Exploration Through Role Playing*; R. and I. Hawley, *Developing Human Potential*; R. Likert, *The Human Organization*. Four weeks, Tuesday, 6:30-9:30 p.m., \$24.

#### **Leadership: Theory and Practice**

**Rima Miller: Ed.D. Candidate**

Participants view contemporary leadership theory in terms of its applicability. Includes introduction to various leadership theories and schools of thought, and case studies, paying some attention to racism and sexism. Participants explore their individual leadership styles. Includes lecture, discussion, readings, role playings/simulations, films. Ten weeks, Tuesday, 7-9 p.m., \$42.

#### **Managing Yourself Creatively**

**Hal Portner: M.Mus.; Ed.D. Candidate**

Acquaints participants with some imaginative ways to organize their time and themselves. Immerses students in a systematic involvement with life goals, behavior patterns, listening skills, problem-solving and decision-making techniques, effective reading and writing methods, and a pot pourri of related issues. Ten weeks, Tuesday, 6:30-8:30 p.m., \$43.

#### **Self-Defeat and Self-Realization**

**John Barbaro: M.Ed.; Ed.D. Candidate**

Self-defeating behaviors are those habits and personal patterns of living that impede the achievement of one's goals. Workshop systematically isolates those behaviors and their different aspects. Underlying motives are outlined and workable alternatives are found. Recommended readings: A. Lakein, *How to Get Control of Time and Your Life*; M. Schiffman, *Gestalt Self Therapy*; S. J. Warner, *Self-Realization and Self-Defeat*. Ten weeks, Tuesday, 7-9 p.m., \$42.

## **PHOTOGRAPHY**

#### **Basic Photography**

**Richard E. Barrell**

Introduces techniques, materials and equipment. Provides a knowledge of cameras and how they function, including lenses, filters, and various photographic accessories and their uses. How and where to buy cameras inexpensively. Acquaints students with various films, papers, chemicals and photo equipment. Darkroom work optional. Possible field trips to integrate concepts. Recommended readings: Adams, *Camera and Lens*; Eastman Kodak, *Basic Developing, Printing, and Enlarging*. Expenses are \$5-\$20. Ten weeks, Wednesday, 7-9 p.m., \$40.

#### **Introduction to Darkroom Procedures**

**Carol Reck: Photographer**

For beginners. A simple step-by-step presentation of the techniques of film developing, choice of papers and chemicals, contact printing and enlarging of negatives, presentation of finished prints. Student participation in the darkroom is an integral part of the workshop. Each student should have access to a camera. Expenses are \$10. Section 1: Ten weeks, Wednesday, 7:30-10 p.m.; Section 2: Ten weeks, Thursday, 7:30-10 p.m. Each section is \$78.

## **PRINT & DESIGN**

#### **Batik**

**Beth Turpin**

Create patterns on sheets, pillow cases, shirts, pants, wall plaques, etc., using batik method. Covers several methods of batik including a short cut to true batik. Batik may be combined with other media and methods. Recommended reading: Meilach, *Batik and Tie Dye*. Expenses are \$10. Ten weeks, Wednesday, 6:30-9:30 p.m., \$63.

#### **Drawing and Designing in Color**

**Betsy Morris: M.F.A. Candidate**

Introduces basic color theory and its practical application in art with an emphasis on drawing and design. Theory is demonstrated using illustrations based on the work of Josef Albers. Drawings done in pastels or colored pencils and include color mixing, spatial design, transparency, and the



effects of natural and artificial light. Individually designed final project concentrates on further explorations of color in drawing or related area. Expenses are \$5. Ten weeks, Tuesday, 6:30-9:30 p.m., \$60.

#### Fabric Design and Printing

Carolyn Ray: M.F.A.; Artist-in-Residence, Butterfield House

Designing and printing four-yard lengths of fabric in one and two colors. Includes the construction of a 4½ foot silk-screen, dye-mixing, and the use of paper, lacquer, and lacquer film stencils. Photo-silkscreening and the use of a "striping box". Work includes a survey of design principles: figure-ground relationships, line vs. shape, and the use of transparencies. Basic background in design and color design helpful. Expenses are \$15-\$20. Ten weeks, Wednesday, 7-10 p.m., \$60.

#### Gravestone Rubbing: Background, Technique, Practice

Melvin G. Williams: Ph.D.

Morning session: slide-illustrated discussion on artistic and historical attractions of New England's seventeenth- and eighteenth-century graveyards. Afternoon session: guided practice in making gravestone rubbings, using both oil and wax techniques. Expenses are \$5. Workshop to be held in Longmeadow, MA, Saturday, October 2, 10 a.m.-3 p.m., \$10.

#### Printmaking: Two Methods Without A Press

Betsy Morris: M.F.A. Candidate

Design and construction of both woodblocks and collagraphs (collages built from a variety of found objects). Production of prints in black and white and color. Concentration on one type after introduction. Includes printmaking for children. Expenses are \$10-\$15. Ten weeks, Wednesday, 6:30-9:30 p.m., \$60.

#### Wood and Linoleum Block Printing

Jane Liebman Wolff: M.A.T.; Printmaker

Handprinting methods create both black and white and color prints. Includes fine art of printing techniques and care and use of tools. Exploration of various media and design problems. Emphasis on individual growth and expression. Expenses are \$10-\$15. Ten weeks, Tuesday, 7-10 p.m., \$60.

## SEX EDUCATION

#### Progressive Parenthood: An Introduction to Parent Sex Education

Arthur J. Machia: Director of Progressive Parenthood

Nancy Callahan: R.N.; Nursing Instructor

Practical approach to teaching parents to teach their children about sexuality. Provides factual information as well as a "jumping-off" point for discussion of attitudes relating to childbearing. Class projects are designed to offer practical problem solving skills. Required readings: Freud, *The Sexual Enlightenment of Children*; Gordon, *The Sexual Adolescent*; Montreal Health, *V.D. and Birth Control Handbooks*; Pomeroy, *Your Child and Sex*. Expenses are \$13. Seven weeks, Tuesday, 7-9:30 p.m., \$35.

#### Sex Role Awareness for Men and Women

Carlene Riccelli: M.Ed., Counseling; Ed.D. Candidate

As sex role expectations for both men and women have changed over the past decade, there has been a corresponding effect on male-female, female-female, and male-male relationships. In a supportive environment, using small group exercises, readings, films and discussion, workshop explores alternatives for non-sexist relationships. Four weeks, Thursday, 6-10 p.m., \$33.

## ...AND MORE

#### Real Estate

David W. Ryan: Real Estate Broker

Basic knowledge and practices in real estate. Terms, instruments, and relationships, both legal and financial, are stressed in an analysis of real property brokerage, valuation and financing. Provides a base from which the student can explore specialized areas of real estate and is an excellent preparation for the Massachusetts Real Estate License examination. Textbook included in workshop fee. Ten weeks, Wednesday, 7-10 p.m., \$69.

Each Credit-Free Workshop is identified by a specific number, which must be included on the Registration Form (page 22). Below is a list of all the workshops with their registration numbers.

#### ARTS AND CRAFTS

- E001 Cartoon Art
- E002 Circus Arts
- E003 Colonial Restoration
- E004 Crewel
- E005 Matting and Mounting
- E006 Patchwork
- E007 Pottery
- E008 Upholstery

#### CULTURING THE MIND-BODY

- E009 Buddhist Insight Meditation
- E010 Creative Movement
- E011 The Tarot
- E012 Yoga: Beginning
- E013 Yoga: Intermediate

#### EAST WEST INTEGRAL STUDIES

- E014 Acupuncture Massage: Introduction
- E015 Acupuncture Massage: Intermediate
- E016 Macrobiotics: Introduction
- E017 Macrobiotic Cooking: Introduction
- E018 Oki Yoga
- E019 Art of Palm Healing

#### DANCING

- E020 Ballet I-II
- E021 Modern Dance: Beginning
- E022 Tap Dancing: Beginning

#### ENVIRONMENT

- E023 Alternative Energy: Methane
- E024 From the Ground Up

#### FOREIGN LANGUAGES: CONVERSATION

- E025 Conversational French
- E026 Getting Along in German I
- E027 Getting Along in German II
- E028 Conversational Italian
- E029 Conversational Spanish

#### INSTRUMENTAL MUSIC

- E030 Folk-Guitar Finger-Style: Basic
- E031 Instrumental Folk Rag Guitar: Inter

#### LANGUAGE, LITERATURE & WRITING

- E032 Creative Self-Stimulation
- E033 Grantsmanship
- E034 Improve Your Handwriting
- E035 Literature and Fiction: Going Crazy
- E036 Sign Language: Beginning
- E037 Sign Language: Advanced
- E038 Writing for Magazines
- E039 Writing Well

#### OUTDOORS

- E040 Hang Gliding
- E041 Inflated Structures

- E042 Technical Rock Climbing: Intro
- E043 Technical Rock Climbing: Inter
- E044 Tennis From the Beginning

#### PERSONAL GROWTH

- E045 Assertiveness for Men and Women
- E046 Developing Consulting Skills
- E047 Leadership: Theory and Practice
- E048 Managing Yourself Creatively
- E049 Self-Defeat and Self-Realization

#### PHOTOGRAPHY

- E050 Basic Photography
- E051 Intro to Darkroom Procedures

#### PRINT AND DESIGN

- E052 Batik
- E053 Drawing and Designing in Color
- E054 Fabric Design and Printing
- E055 Gravestone Rubbing
- E056 Printmaking: Two Methods
- E057 Wood and Linoleum Block Printing

#### SEX EDUCATION

- E058 Progressive Parenthood
- E059 Sex Role Awareness

#### ...AND MORE

- E059 Real Estate

# INDEX

## A

Academic Extension Course  
 Descriptions/13  
 Accounting/13  
 Admissions  
   Academic Extension/6  
   Credit-Free Workshops/33  
 Animal Science/13  
 Anthropology/13  
 Art/13  
 Arts Extension Service/30  
 Astronomy/6  
 Auditing/8

## B

Bachelor of General Studies/3, 13  
 Botany/14  
 Business Administration/14

## C

Calendar  
   Academic Extension/5  
   Credit-Free Workshops/34  
 Cancellations  
   Academic Extension/7  
   Credit-Free Workshops/33  
 Change of Program/6  
 CLEP/68  
 Communication Studies/14  
 Computer and Information Science/14  
 Continuing Education Offices/1  
 Core Requirements/7  
 Counseling Services/11  
 Credit/7  
 Credit-Free Workshop Program  
   Information/33  
   Arts & Crafts/34  
   Culturing the Mind-Body/34  
   Dancing/36  
   Environment/36  
   Foreign Languages: Conversation/36  
   Instrumental Music/36  
   Language, Literature and Writing/37  
   Outdoors/37  
   Personal Growth/38  
   Photography/38  
   Print and Design/38  
   Sex Education/38  
   ... And More/39  
 Credit Options/8

## D

Day/Location Schedule/26  
 Degrees/7  
 Dependent Health Services Fee/10

## E

Economics/15  
 Education, School of  
   Courses/15  
   Pass/Fail Policy/8  
 English/16  
 Entomology/16  
 Expenses/9

## F

Fees  
   Academic Extension/9  
   Credit-Free Workshops/33  
 Financial Aid Representative/12  
 Financial Assistance/11  
 Fine Arts Fee/9  
 Food Science and Nutrition/16  
 French/16

## G

General Business and Finance/16  
 Geology/16  
 Great Decisions/30, inside front cover

## H

Health Insurance Fee/9  
 Health Services Fee/9  
 History/16  
 Holyoke  
   Counseling/11  
   Parking/10  
   Registration/5, 6  
   Textbooks/11  
 Hotel, Restaurant and Travel  
   Administration/17

## I

Individualized Study/8  
 I.D. Card/10

## J

Journalistic Studies/17

## L

LEEP/12  
 Legal Studies/17  
 Library Science Program/31  
 Linguistics/18

## M

Mail Registration  
   Academic Extension/5,6  
   Credit-Free Workshops/33,34  
 Management/18  
 Marketing/18  
 Mathematics/18  
 Matriculation Policy/7  
 Music/18

## N

Nursing/18

## O

Off-Campus Information/2, 5, 6, 10, 11  
 Office Hours  
   Counseling/11  
   Registration/6, 41  
 Optional Fees/9  
 Orientation for CE Students/11  
 Overloads/8

## P

Parking/10  
 Pass/Fail/8  
 Philosophy/23  
 Physical Education Fee/10  
 Physics/23  
 Picture I.D./10  
 Plant and Soil Sciences/23  
 Plant Pathology/24  
 Polish/24  
 Political Science/24  
 Program Alternatives/30  
 Psychology/24

## R

Refunds/5, 9, 33  
 Registration/5, 6, 33  
 Registration Form  
   Academic Extension/19  
   Credit-Free Workshops/22  
 Registration Office/6  
 Rhetoric/24

## S

Schedule of Courses/27  
 Sociology/24  
 Spanish/25  
 Statistics/25  
 Student Services/11  
 Suspended Student Policy/6

## T

Teacher Education Program/31  
 Technical Guidance Center/32  
 Textbooks/10  
 Transcripts/7

## U

University Financial Aid/11

## V

Veterans Benefits/12

## W

Wintersession/32  
 Women's Studies/25

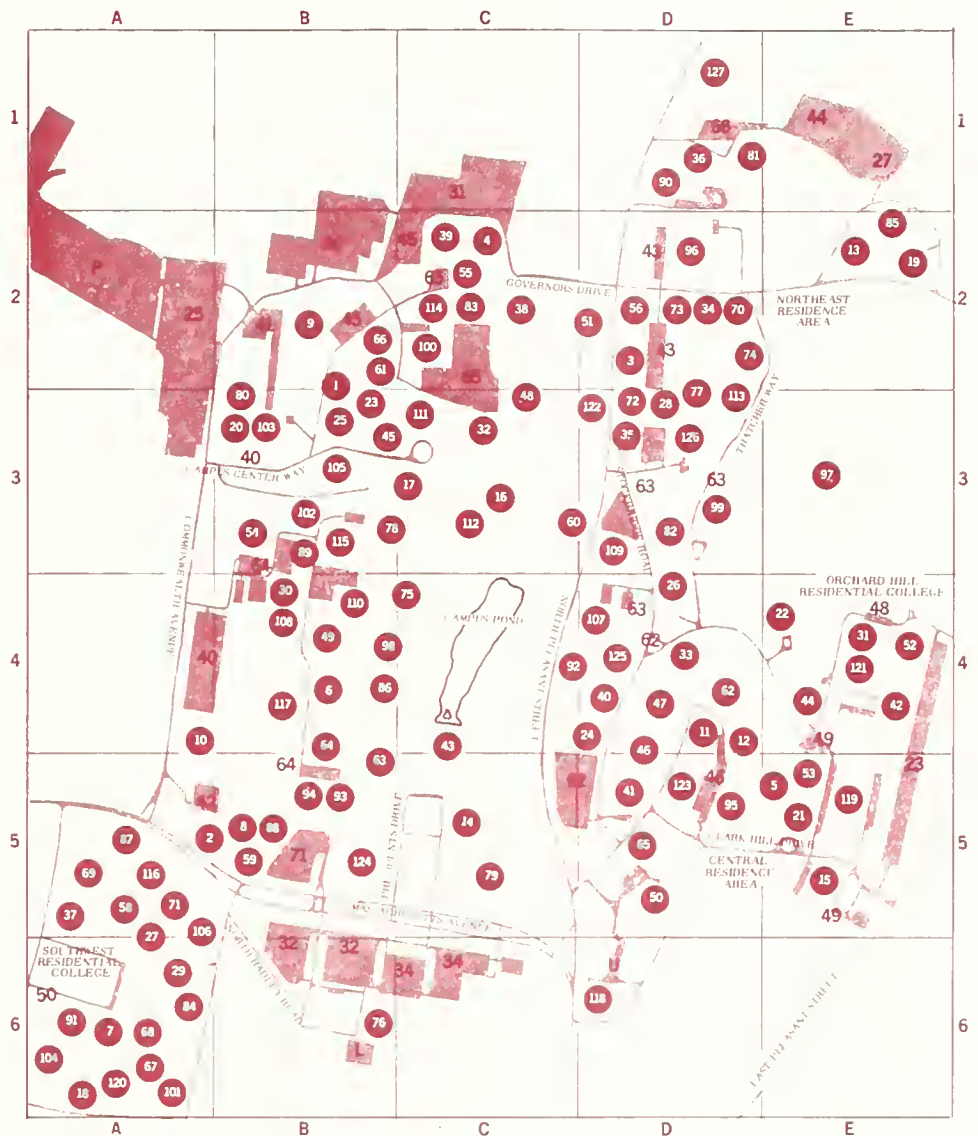
## Z

Zoology/25



# University of Massachusetts at Amherst Campus Guide

- 1 Agricultural Engineering Bldg. B3
- 2 Army ROTC Building A5
- 3 Arnold D2
- 4 Astronomy Bldg. C2
- 5 Baker E5
- 6 Bartlett Hall B4
- 7 Berkshire Dining Commons A6
- 8 Berkshire House B5
- 9 Bowditch Hall B2
- 10 Boyden Physical Education Bldg. A4
- 11 Brett D4
- 12 Brooks D4
- 13 Brown E2
- 14 Business Administration, School of C5
- 15 Butterfield E5
- 16 Campus Center (Murray D. Lincoln) C3
- 17 Campus Center Parking Garage C3
- 18 Cance A6
- 19 Cashin E2
- 20 Central Stores B3
- 21 Chadbourne E5
- 22 Chancellor's House E4
- 23 Chenoweth Laboratory B3
- 24 Clark Hall D4
- 25 Cold Storage Bldg. B3
- 26 Conservation Bldg. D4
- 27 Coolidge A5
- 28 Crabtree D3
- 29 Crampton A6
- 30 Dickinson Hall B4
- 31 Dickinson E4
- 32 Draper Hall C3
- 33 Durfee Conservatory D4
- 34 Dwight D2
- 35 East Experiment Station D3
- 36 Education, School of D1
- 37 Emerson A5
- 38 Engineering Bldg. East C2
- 39 Engineering Laboratory C2
- 40 Faculty Club D4
- 41 Fernald Hall D5
- 42 Field E4
- 43 Fine Arts Center C5
- 44 Fisher Laboratory E4
- 45 Flint Laboratory B3
- 46 Franklin Dining Commons (South) D4
- 47 French Hall D4
- 48 Goessmann Laboratory C3
- 49 Goodell Building B4
- 50 Gorman D5
- 51 Graduate Research Center D2
- 52 Grayson E4
- 53 Greenough E5
- 54 Grinnell Arena B3
- 55 Gunness Engineering Bldg. C2
- 56 Hamlin D2
- 57 Hampden Dining Commons A6
- 58 Hampshire Dining Commons A5
- 59 Hampshire House B5
- 60 Hasbrouck Laboratory C3
- 61 Hatch Laboratory B2
- 62 Health Center (Infirmary) D4
- 63 Herter Hall B5
- 64 Hicks Physical Education Bldg. B4
- 65 Hills D5
- 66 Holdsworth Hall B2
- 67 J. Adams A6
- 68 J. Q. Adams A6
- 69 James A5
- 70 Johnson D2
- 71 Kennedy A5
- 72 Knowlton D3
- 73 Leach D2
- 74 Lewis D2
- 75 Library, University C4
- 76 Lincoln Apartments D6
- 77 Lyon, Mary D3
- 78 Machmer Hall B3
- 79 Mahar Auditorium C5
- 80 Maintenance B3
- 81 Mark's Meadow Elementary School D1
- 82 Marshal Hall & Annex D3
- 83 Marston Hall C2
- 84 Mackimmie A6
- 85 McNamara E2
- 86 Memorial Hall B4
- 87 Melville A5
- 88 Middlesex House B5
- 89 Mobile Classrooms B3
- 90 Montague House D1
- 91 Moore A6
- 92 Morrill Science Center C4
- 93 Munson Hall B5
- 94 Munson Hall Annex B5
- 95 New Africa House D5
- 96 North Physical Education Bldg. D2
- 97 Observatory E3
- 98 Old Chapel B4
- 99 Old Infirmary Group D3
- 100 Paige Laboratory C2
- 101 Patterson A6
- 102 Photo Center B3
- 103 Physical Plant Bldg. B3
- 104 Pierpont A6
- 105 Power Plant B3
- 106 Prince A5
- 107 Public Health Center, Western Mass. D4
- 108 Public Safety (Dickinson Hall) B4
- 109 Skinner Hall D3
- 110 South College B4
- 111 Stockbridge Hall C3
- 112 Student Union C3
- 113 Thatcher D3
- 114 Thayer Animal Disease C2
- 115 Thompson Hall B3
- 116 Thoreau A5
- 117 Tobin Hall B4
- 118 University Apartments D6
- 119 Van Meter E5
- 120 Washington A6
- 121 Webster E4
- 122 West Experiment Station D3
- 123 Wheeler D5
- 124 Whitmore Administration Building B5
- 125 Wilder Hall D4
- 126 Worcester Dining Commons (North) D3
- 127 Wysocki House D1







Division of Continuing Education  
Hills House North  
University of Massachusetts  
Amherst, Massachusetts 01002

Non-Profit Organization  
BULK RATE  
U.S. POSTAGE PAID  
Amherst, Massachusetts 01002  
Permit Number 2

A catalog of University of Massachusetts extension  
courses for the evening, part-time, or non-traditional student

CREDIT-FREE WORKSHOPS  
COMMUNITIES IN ACTION

Low cost workshops for board members,  
volunteers and staff of community organizations

SEMINAR IN GRANTSMANSHIP  
CREDIT COURSES

Winter session catalog is provided as a supplement  
to the Division's regularly published catalogs.

# WINTERSESSION '77

DIVISION  
OF CONTINUING EDUCATION  
UMASS/AMHERST



# WINTERSESSION 1977

[illegible]

| Department                                                              | Course Number                                                           | Section/<br>Lab No.                                                     | Course Title | Number of Credits                                                       | Course Fee |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------|------------|
| <div style="border: 1px solid black; height: 20px; width: 100%;"></div> | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |              | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |            |
| <div style="border: 1px solid black; height: 20px; width: 100%;"></div> | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |              | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |            |
| <div style="border: 1px solid black; height: 20px; width: 100%;"></div> | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |              | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |            |
| <div style="border: 1px solid black; height: 20px; width: 100%;"></div> | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |              | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |            |
| <div style="border: 1px solid black; height: 20px; width: 100%;"></div> | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |              | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |            |

**OFFICE USE ONLY**  
**AE 77-5**  
 Total Amount Due \$ \_\_\_\_\_  
 Amount Received \$ \_\_\_\_\_  
 Check ☐ No. \_\_\_\_\_  
 Cash ☐  
 Received By, .....  
 Date Received .....  
 Comments:

Mail Registration Form and payment to: **Division of Continuing Education, AE 77-5**  
 P.O. Box 635  
 Amherst, Massachusetts 01002

Make checks payable to: **REGISTRATION FEE \$ 5.00**  
 (required of all students)

**TOTAL AMOUNT DUE AND ENCLOSED \$ \_\_\_\_\_**

Do not include lab fees in registration payment.

Students are responsible for obtaining a copy of the complete Spring 1977 Continuing Education catalog and for reading the General Information section. This section contains academic, credit and degree information important to all students. To aid the student, a copy of the Spring 1977 catalog will be mailed upon receipt of the registration for Wintersession 1977.

| Alpha | Comp | Bus | Stud |
|-------|------|-----|------|
|       |      |     |      |







*For the past four years, the Division of Continuing Education has supplemented the University of Massachusetts' programming during the interim period between fall and spring semesters, a period now called Wintersession. This winter, the Division is offering a variety of both credit courses and Credit-Free Workshops during the three week period beginning January 3, 1977. Workshop schedules vary and are noted with the workshop descriptions.*

## CREDIT-FREE GENERAL INFORMATION

The Credit-Free Workshop Program is a series of workshops offered by the Division of Continuing Education specifically for persons interested in expanding their skills, furthering their careers, improving their community life, or partaking of the expertise offered by others, usually experts and teachers in their fields. The workshops are for those for whom academic credit is not a priority.

### ADMISSIONS

The Division of Continuing Education has an open admissions policy with regard to the Credit-Free Workshops it offers. Interested persons may enroll for as many workshops as they wish without concern for their educational background. Persons aged 65 and over may register, free of charge, on a space-available basis, for any Credit-Free Workshop. Please call the Records Office, 545-3653, for further information.

### REGISTRATION

To register by mail, complete the Credit-Free registration form in the center fold of this catalog, and mail by December 22, with full payment to:

Credit-Free Workshops  
AE 77-5  
Division of Continuing Education  
P. O. Box 835  
Amherst, MA 01002

Make checks payable to: Continuing Education, AE 77-5. In addition to the workshop fee, all registrations must include a \$5 registration fee, charged once.

**The registration fee is waived for Community In Action Workshops.** When registration meets the minimum number, registrants will be notified immediately by mail with a class card which includes notice of meeting place. Mail registrations must be postmarked December 22 at the latest.

**Walk-in registrations** will be accepted at any time on a space-available basis. Come to the Continuing Education Records Office located in the lobby of Hills House. Office hours are:

Monday-Thursday, 8:30 a.m.-7 p.m.

Friday, 8 a.m.-5 p.m.

Saturday, 10 a.m.-1 p.m. (Closed holiday weekends.)

Enrollment in all workshops is limited to a number that is manageable and



acceptable to each instructor, therefore early registration is encouraged. When requests for a workshop exceed the number to be enrolled, the Division will attempt to arrange for an additional section. Names of registrants will be placed on a waiting list in the order in which they are received.

## **FEES & EXPENSES**

Credit-Free Workshops are self-funding and, in general, fees have been computed on the basis of the number of contact hours which a workshop meets. In order to make each workshop self-supporting, a minimum number of enrollments is usually necessary. Specific fees may be found in the workshop descriptions.

Full refund will be made by mail if a workshop is cancelled due to underenrollment.

To withdraw from a workshop the student must notify the Records Office in writing by mail, or in person during the regular office hours. Notifying the instructor or ceasing to attend class does not constitute official withdrawal.

### **Refund Schedule**

After:

|                |           |
|----------------|-----------|
| First meeting  | 80%       |
| Second meeting | 60%       |
| Third meeting  | NO REFUND |

There are NO REFUNDS for workshops with schedules of less than one week unless withdrawal is effected prior to the beginning of the workshop. In cases of withdrawal prior to the beginning of a workshop, a full refund will be processed once the Records Office is notified in writing or in person.

## **OTHER IMPORTANT INFORMATION**

**Cancellations**—The Division of Continuing Education reserves the right to cancel, postpone, or combine workshops and to change instructors. We attempt to keep changes minimal. Weather cancellations are announced over local radio stations.

**Workshop locations**—Workshops will take place in Amherst unless otherwise noted in the workshop description. Exact locations will be announced by mail once students have registered.

**Reading Material**—Reading material information may be obtained from the instructor on the first night of the workshop. Required books may be obtained at the University Textbook Annex. The Annex will be open January 3 through January 7 from 9 a.m. to 4 p.m.; closed January 3-24.

**Supplies**—Some workshops require supplies which are to be paid for by each participant if he or she chooses to have them. The estimated cost of these supplies is listed at the end of the workshop description. Since expense money is estimated and optional it is not to be included in workshop and registration fees, and students should not pre-pay.

**Parking**—During the month of January there are no restrictions in parking areas except for tow-away zones.

Registration information for credit courses may be found at the end of this catalog, along with course descriptions.

# CREDIT-FREE WORKSHOPS

## **Beginning Modern Dance WS01**

**Donna Potter: University Dancer**

Covers a basic modern dance warm-up technique and learning movement patterns. Emphasis is on control, kinesthetic awareness, and enjoyment of moving through space to music. No previous experience required, only a desire and commitment to learn. Section 1: Three weeks, Monday-Thursday, 10-11:15 a.m., \$30. Section 2: Three weeks, Monday-Thursday, 6:30-7:45 p.m., \$30.

## **Developing Consulting Skills WS02**

**Robert C. Hawley: Ed.D.; Consultant in Education and Management**

For educational and organizational consultants, and those interested in developing consulting practices in education, organizational development, or the helping professions. Offers activities and guidelines: assessing needs, providing resources, structuring risks, giving feedback, uncovering blocks to effective collaboration, and determining appropriate task and maintenance ratios. Demonstrates avenues to creative problem solving such as brainstorming, synectics, and lateral thinking; techniques for decision-making such as cost-benefit analysis, risk-reward ratios, and decision charting; and group procedures such as role-playing, simulations, revealed difference surveys, and leaderless discussion groupings. Recommended readings: R. Hawley, *Value Exploration Through Role Playing*; R. and I. Hawley, *Developing Human Potential*; R. Likert, *The Human Organization*. Three weeks, Wednesday, 6:30-9:30 p.m., \$18.

## **Sign Language and Finger Spelling: Beginning WS03**

**Stanley Patrie: Teacher of the Deaf**

Manual communication as used by most deaf people in this country. Includes a brief history of the use of the language of signs, background information on deafness and how it affects those who have been born deaf or lost their hearing later in life. Students converse with totally deaf people, including the instructor, who is also deaf. Required text: Lottie Riekerhot, *Talk to the Deaf*, Gospel. Three weeks, Monday and Wednesday, 7-9:30 p.m., \$30.

## **Developing Creative Learning Games: What To Do With Your Child On A Rainy Day WS04**

**Eleanor Ashton and Maxine Markson: Ed.D. Candidates; specialists in early childhood education**

Focuses on the creation of learning games and centers for children under six that will support and extend the development of mathematical and reading readiness skills, scientific concepts, gross and fine motor abilities and aesthetic and social sensibilities of the preschool child. Participants use materials that are found in the home to develop educational games and centers. Provides a relaxed and informal environment for the exchange of ideas that "work" with young children. Two weeks, Tuesday and Thursday, 7-9 p.m., \$18. Workshop begins January 11.

## **Making Games for Your Classroom WS05**

**Joyce Davis: Resource Teacher**

Elementary school children really like to play games which are an excellent way to take the boredom out of necessary drill. This "hands-on" workshop helps teachers create math and reading games for the classroom. Emphasizes skill continuums and task analysis of the games. Recommended reading: Edco Reading and Learning Center, *A Practical Guide to Creating Reading Games*. Expenses are \$3. Three weeks, Wednesday, 7-9 p.m., \$14.

#### Pottery WS06

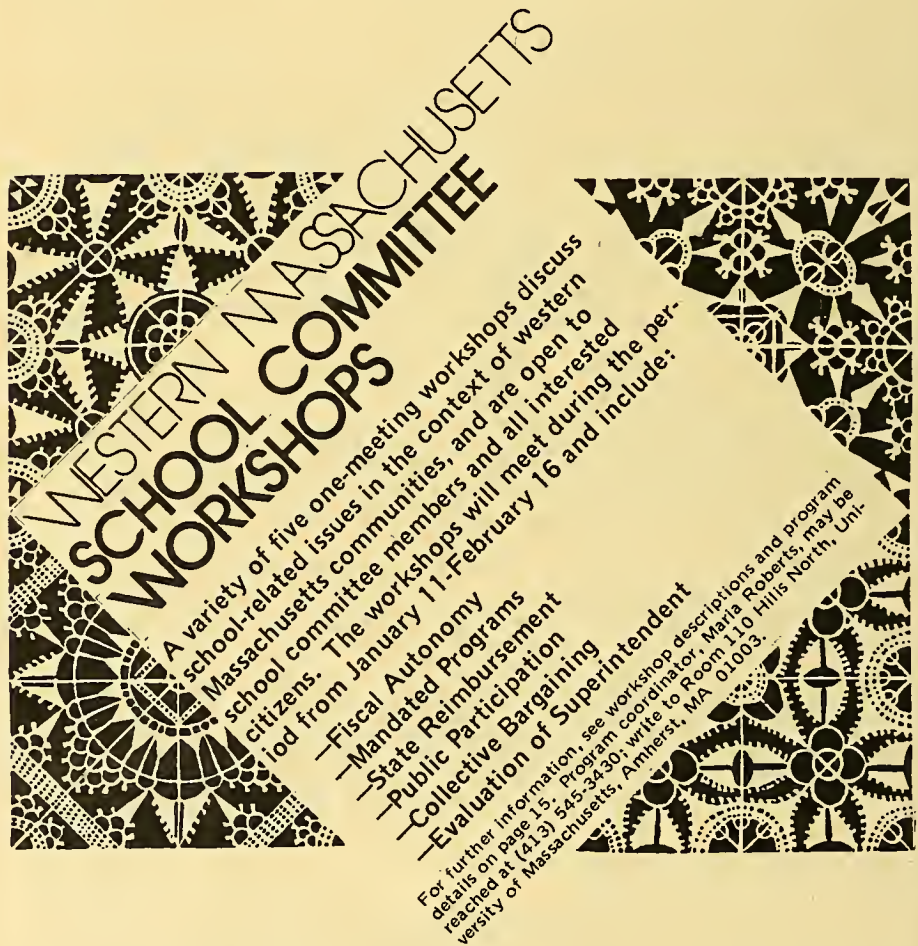
**Frederic A. Englander: Potter**

Techniques of the potter's wheel, glazes, clay chemistry and handbuilding. Stoneware clay and glazes are fired in a reduction atmosphere to cone 10. Includes opportunity to fire eight pots. Additional pots may be fired for a minimal fee. Expenses are \$5. Three weeks, Tuesday and Thursday, 7:30-9:30 p.m.; Saturday, 10 a.m.-12 noon, \$54.

#### Basic Folk Guitar Finger-Style WS07

**Vincent Mitchell: Guitarist**

Guitar care, tuning, picking technique, notereading, basic chording, basic guitar theory, tablature, back-up picking, capo, picking styles, one private lesson, listening session, and song swap. Songs traditional and by Woody Guthrie, Tom Paxton, Leonard Cohen, Paul Simon. "Sing Out!" magazine articles. Access to guitar necessary. Three weeks, Monday, Wednesday and Thursday, 7-9 p.m., \$38.



**WESTERN MASSACHUSETTS  
SCHOOL COMMITTEE  
WORKSHOPS**

A variety of five one-meeting workshops discuss school-related issues in the context of western Massachusetts communities, and are open to school committee members and all interested citizens. The workshops will meet during the period from January 11-February 16 and include:

- Fiscal Autonomy
- Mandated Programs
- State Reimbursement
- Public Participation
- Collective Bargaining
- Evaluation of Superintendent

For further information see workshop descriptions and program details on page 15. Program coordinator, Maria Roberts, may be reached at (413) 542-3430; write to Room 110 Hillis North, University of Massachusetts, Amherst, MA 01003.



### **Writing for Yourself WS08**

**Nancy Thayer: M.A.; Writer**

Deals intensively with the use of words for self-discovery, self-creation, and self-therapy. Illustrative readings from famous diaries and letters. Games and exercises in word choice and use to help us find ourselves; games and exercises in word control to help us form ourselves. Three weeks, Saturday, 9 a.m.-12 noon, \$19.

### **Conflict Resolution WS09**

**Jack J. Rosenblum: J.D., Yale; Ed.D. Candidate**

Skills dealing with conflict in creative and nourishing ways. Explores intra- and inter-personal conflicts and develops strategies to resolve them in a way that creates bonds and trust rather than resentment or suspicion. Uses role-play, guided fantasy, structured experiences and feedback; includes inevitable personal conflicts and attempts to resolve them. Learn to enjoy and bask in the warm glow that comes from having resolved a conflict successfully. Recommended reading: George Bach, *Creative Aggression*. Saturday and Sunday, January 22 and 23, 1977, 9 a.m.-5 p.m., \$65.

### **Self-Defeat and Self-Realization WS10**

**John Barbaro: M.Ed.; Ed.D. Candidate**

Self-defeating behaviors are those habits and personal patterns of living that impede the achievement of one's goals. Workshop systematically isolates those behaviors and their different aspects. Underlying motives are outlined and workable alternatives are discussed. Recommended readings: A. Lakein, *How to Get Control of Time and Your Life*; M. Schiffman, *Gestalt Self Therapy*; S.J. Warner, *Self-Realization and Self-Defeat*. Three weeks, Tuesday and Thursday, 7-9:30 p.m., \$34.

### **Creative Analysis—An Introduction WS11**

**Penny Horowitz: M.A.T., History; Ed.D. Candidate**

Creative Analysis uses words to solve problems. Students become acquainted with principles of thinking as they relate to language usage and have the opportunity to practice various problem-solving techniques such as qualification, classification and analogy. These and others are studied and then put together to create a general approach to solving problems of all kinds. Recommended reading: Samson and Upton, *Creative Analysis*. Three weeks, Tuesday and Thursday, 7:30-10 p.m., \$31.

### **Dreams and Dream Interpretation—A Jungian Approach WS12**

**Steven Bengis: Counselor and Therapist**

Introduces basics of Jungian depth psychology. In addition to exploring basic theory, discusses the analysis of dreams using dream examples. Non-experiential workshop, but students will be asked to keep a dream journal for their own use. Recommended reading: Whitmont, *A Symbolic Quest*. Three weeks, Monday and Thursday, 7:30-9:30 p.m., \$24.

### **The Tarot: An Introduction to its Psychology and Symbolism WS13**

**Paul R.S. Zelle: M.A.; M.Div.**

Basic techniques of meditation using the archetypal Tarot card symbols. The Tarot trumps may be viewed as keys that unlock an individual's personal unconscious to lead to a greater awareness of the spiritual or higher self. Detailed analysis of the Tarot symbols and their relationship to everyday life. Discussions consist of a history of the Tarot, modern profane practices, such as fortune telling, and current misconceptions. Students make Tarot cards. Expenses are \$3.50 for cards. Three weeks, Tuesday, 6:30-9:30 p.m.; Saturday, 9 a.m.-12 noon, \$36.

### **The Family: A Study of Women and Children in Fiction WS14**

**Leah B. Glasser: M.A.; Ph.D. Candidate**

Analysis of approaches to marriage and the family in fiction, especially as they concern the treatment of children and the status of women. A three week seminar for the person who

seeks an understanding of the confusing, often anxiety-producing roles we fulfill as members of a marriage or family and how the psychological effects of these roles are expressed in fiction. Examines the guilt and anxiety which naturally result in the consciousness of a woman or child growing up in a hostile, role-oriented world. Focus is on only one or two of the following recommended readings: C. Bronte, *Jane Eyre*; E. Bronte, *Wuthering Heights*; Woolf, *Mrs. Dalloway*. Three weeks, Monday and Wednesday, 7-9:30 p.m., \$36.

#### **A Crash Course in Basic Photography WS15**

**Richard Barrell: Photographer**

Discusses cameras and lenses and related equipment. Pictures shot the first week. Next comes processing the film and preparing contact prints. The final Saturday the negatives are printed. Each person acquires a sense of photography and at least one fine print. Expenses are \$5-\$20. Three weeks, Saturday, 9 a.m.-12 noon, \$18.

#### **Basic Calligraphy (The Art of Hand Lettering) WS16**

**Valerie Aston: Freelance Calligrapher**

Concentrates on the basic italic alphabet. If there is time, advanced alphabets will be introduced. Class is small to allow as much individual attention as needed. Expenses are \$2. Three weeks, Monday and Wednesday, 7:30-10 p.m., \$37.

#### **Cartoon Art WS17**

**Brian Turner: Cartoonist**

Development of style and technique in graphics, and story-telling in comics and cartooning. Differences explained among political, underground, gag, parody, and strip. Includes history and recent technical/artistic developments. Use of tools, marketing, with some attention to animation and children's book illustration as requested by participants. Art equipment costs will vary according to needs of individual. Recommended reading: Hamm, *Cartooning*; Robinson, *Comics*; Steranko, *History of the Comics*; Vol. I, II. Three weeks, Monday, 7-10 p.m., \$18.

#### **Print Collecting and Appreciation WS18**

**Leslie Kramer: M.F.A., Printmaking**

Designed for those who would like to collect art on a modest budget. Lecture-discussions on what to look for when buying an original print. Visits to a local museum or gallery uncover the range of artwork in this area. Topics covered include the difference between etching, lithography and serigraphy; what determines the value of an original print; and care and display. One Saturday afternoon field trip to be arranged. Recommended reading: Zigrosser, *A Guide to the Collecting and Care of Original Prints*. Three weeks, Saturday, 10 a.m.-12 noon, \$17.

#### **Woodcut Printing WS19**

**Betsy Morris: M.F.A.**

Introduction to the design and construction of woodblocks. Use of hand-printing methods to produce prints in black and white. Demonstration and explanation of color methods in woodblock printing. Emphasis on exploitation of the wood as a print medium. Expenses are \$10-\$15. Three weeks, Saturday, 9 a.m.-12 noon, \$18.

#### **Busy Person's Approach to Patchwork WS20**

**Victoria Olivo: Designer**

The use of patchwork in making quick, inexpensive changes in one's home and clothing in minimum amount of time. Includes patchwork quilts that can be sewn in two weeks; pillow pot holders, samplers, and other small color spots for the home; and application of calico or clothing using recycled material such as denim. Knowledge of sewing machine necessary. Three weeks, Tuesday, 7-9 p.m., \$12.

**Small Woodlot Management WS21****Charles Thompson: Graduate Student, Forestry**

Basic concepts of forest ecology: wood as a fuel, woodlot management for sawlogs, fuelwood, wildlife habitat. Relevant techniques of measurement. Saturday afternoon visits to area woodlots. Three weeks, Monday and Wednesday, 7:30-9 p.m.; Saturday, 1-4 p.m., \$36.

**Identification of Trees and Shrubs WS22****Charles Thompson**

Identification of native trees and shrubs of the Amherst area. The tree as a life form. The forest environment and basic concepts of woods ecology. Saturday morning field sessions. Expenses are \$3.25. Three weeks, Tuesday and Thursday, 7:30-9 p.m.; Saturday, 9 a.m.-12 noon, \$36.

**Dry It—You'll Like It! WS23****Merrilee Koplowitz: B.A., Nutrition; Carpenter**

Basic carpentry skills are used to dry foods as a means of preserving with minimum energy input and maximum flavor and nutrient retention. Each student constructs a sturdily built, well designed unit requiring only solar energy to operate. The solar food unit dries 16-20 pounds of fruits or most vegetables at one time. A comparable drier would cost at least \$100 to buy. Materials required to build it cost about \$50. Men and women with no previous carpentry experience or skills are encouraged to participate. Recommended reading: McMillian, *Dry It—You'll Like It!* January 3, 1977, 7:30-8:30 p.m.; January 15, 16, 22, 23, 1977, 10 a.m.-5 p.m., \$51.

**Little Kid and Big Kid Terrarium and Bottle Garden Construction WS24****Susan Roy: Certified Arborist; Horticulturist**

Both adults and children are invited to bring their plants and containers for a workshop on the mini-environment—planting technique, and the after-care of the terrarium. Some sand painting will be demonstrated. Planting done in a bottle will be shown. Saturday, January 22, 1977, 9-11 a.m., \$4.

**Williamsburg-Style Colonial Arrangements: How to Collect and Preserve Local****Herbs and Plants WS25****Susan Roy**

Discusses native herbs and weeds suitable for collecting and drying. Particular harvest times and best drying methods are included, along with a look at the best garden flowers to grow for dried arrangements. Students design and complete a dried arrangement. Materials will be provided and are included in the workshop fee. Bring scissors, wirecutters, florist tape and wire. Saturday, January 8, 1977, 9 a.m.-12 noon, \$18.

**Seminar in Massachusetts Special Education Law—Chapter 766 WS26****Daniel A. Burke: Doctoral Student; Special Education Supervisor**

Review of the legal process involved in Chapter 766 prior to the delivery of special education services by public school systems. Preparation for and participation in sample core evaluation team meetings. Provides skills in how to critically evaluate educational plans and monitor the progress of the pupil. Discussion of the special education resources which are available to support the student with special needs, teachers, administrators, parents, and ancillary personnel. Three weeks, Saturday, 9 a.m.-12 noon, \$18.

**Theatrical Lighting: Basic WS27****James MacRostie: Production Stage Manager, Fine Arts Center****Lewis E. Louraine, Jr.: Stage Manager, Fine Arts Center**

Fundamentals of theatrical lighting: how to develop a light plot, hang, circuit, focus and gel the lights. Includes types of dimmer systems and lighting equipment. Three weeks, Tuesday, 7-10 p.m., \$18.



# 22.5 Million Per Hour: IS YOUR ORGANIZATION GETTING ITS FAIR SHARE?

## Seminar in Grantsmanship WS54 Daniel Lynn Conrad: Consultant

How To Get More Grants: A Systems Approach To Grantsmanship is a one-day credit-free seminar which concentrates on grantsmanship skills. The seminar leader is Daniel Lynn Conrad, consultant and president of the Institute for Fund-Raising in San Francisco. The seminar will be held on Saturday, January 22, 1977, 8:30 a.m.-4:15 p.m. at the University of Massachusetts/Amherst. To register for the Seminar in Grantsmanship, read the registration information on pages 1 & 2, and fill in the registration in the center fold of this catalog. Program coordinator, Stan Rosenberg, may be reached at (413) 545-3420. Workshop cost: \$50.

## Theatrical Lighting: Advanced WS28

James MacRostie and Lewis E. Lorraine

Theory of lighting, lighting instruments, electricity and color. Lecture and demonstration. Three weeks, Thursday, 7-10 p.m., \$18.

## Technical Production WS29

Lewis E. Lorraine, Jr. and Michael Van Dyke: Assistant Technical Director, Amherst College

An overview of the technical aspects of theater from reading the play through design and construction to striking the show. Discussion and demonstration of skills and techniques. Sources of materials and information on how to locate and cajole theatrical supplies. Three weeks, Monday, 7:30-10 p.m., \$15.

## Basic Carpentry WS30

James MacRostie

Acquaints the student with basic carpentry techniques for either the stage or home. Included are repair and maintenance and proper use of home power tools. Expenses are \$10. Three weeks, Wednesday, 7-10 p.m., \$18.

## Managing Yourself Creatively WS31

Hal Portner: M.Mus.; Ed.D. Candidate

An activity-oriented weekend designed to acquaint participants with some imaginative/practical ways to organize their time and themselves. The sessions immerse each class member in a systematic involvement with life goals, behavior patterns, listening skills, decision-making techniques, and a potpourri of related issues. Dress comfortably, bring a notebook and a bag lunch. Saturday and Sunday, January 8 and 9, 1977, 10 a.m.-3 p.m., \$21.

# ARTS EXTENSION SERVICE

*The Arts Extension Service is a community development program which works to meet the needs of continuing education in the arts. One objective of the AES is to help develop effective and self-sufficient community arts organizations.*

*Activities include: consulting services in technical and management problems; workshops in community arts management and group dynamics; projects servicing the arts interests and needs of older people, inner city people, rural communities and other special interest groups; maintenance of the Arts Directory, a listing of regional artists; a series of arts seminars and conferences; a booking referral service for artists; Communities to Campus, a program aimed at making UMass/Amherst campus events more available to communities, and "The New England Artists Festival and Showcase", which brings the art and performance talent of Western Massachusetts together for a major two-day celebration*

## Arts Festivals and Special Events WS32

### Seminar leaders to be announced

How to put on an arts festival: planning, booking, budgeting, funding, promoting, presenting, hosting, and evaluating the event; the artists' point of view; use of case examples; how to make the occasion edifying, profitable, and enjoyable; possible spin-offs, special events and themes. Saturday, January 22, 1977, 9 a.m.-5 p.m., \$15 (lunch included).



*The following information must be provided before your application can be processed.*

[illegible]

| Workshop No.                                                                                                   | Section              | Day | Time |
|----------------------------------------------------------------------------------------------------------------|----------------------|-----|------|
| 1. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>                         | <input type="text"/> |     |      |
| *Alternative<br>Choice No. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> |     |      |
| 2. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>                         | <input type="text"/> |     |      |
| *Alternative<br>Choice No. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> |     |      |
| 3. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>                         | <input type="text"/> |     |      |
| *Alternative<br>Choice No. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | <input type="text"/> |     |      |

\*Alternative Choice—In event of cancellation or over enrollment, your second choice. **TOTAL C**

TOTAL COST OF CIB

Workshop No. Date Time

|    |                                                                          |  |  |  |
|----|--------------------------------------------------------------------------|--|--|--|
| 1. | <div style="border: 1px solid black; width: 100px; height: 20px;"></div> |  |  |  |
| 2. | <div style="border: 1px solid black; width: 100px; height: 20px;"></div> |  |  |  |
| 3. | <div style="border: 1px solid black; width: 100px; height: 20px;"></div> |  |  |  |
| 4. | <div style="border: 1px solid black; width: 100px; height: 20px;"></div> |  |  |  |
| 5. | <div style="border: 1px solid black; width: 100px; height: 20px;"></div> |  |  |  |
| 6. | <div style="border: 1px solid black; width: 100px; height: 20px;"></div> |  |  |  |

TOTAL COMMUNITARIANISM

**Please add total cost of Credit-Free Workshops to Communities in Action Workshops fees**

TOTAL AMOUNT



# ST WINTERSESSION 1977

**OPTIONAL:** Your answers to these questions will guide us in planning future workshops. The information will be confidential if you choose to answer.

1. How did you find out about these workshops? \_\_\_\_\_
2. What other workshops would you like to have offered? \_\_\_\_\_
3. Occupation: \_\_\_\_\_ Full time ☐ Part time ☐
4. Are you a student? \_\_\_\_\_ Full time ☐ Part time ☐ Where? \_\_\_\_\_
5. Have you taken a CE Workshop before? \_\_\_\_\_

Fee

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

FREE WORKSHOP FEES \$ \_\_\_\_\_

REGISTRATION FEE \$ 5.00

FREE WORKSHOPS \$ \_\_\_\_\_

Fee

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

NEW WORKSHOP FEES \$ \_\_\_\_\_

AND ENCLOSED \$ \_\_\_\_\_

## FULL PAYMENT MUST ACCOMPANY MAIL REGISTRATION

Make checks payable to:  
Division of Continuing Education, AE77-5

Send to:  
Credit-Free Workshops, AE77-5  
Division of Continuing Education  
P.O. Box 835  
Amherst, MA 01002

## OFFICE USE ONLY

AE77-5

Total Amount Due \$ .....

Amount Received \$ .....

☐ Cash

☐ Check No. ....

☐ S.C.F.W.

Received By .....

Date Received. ....

Comments:

# COMMUNITIES IN ACTION

*Communities In Action is a new program designed to meet some of the training needs of community organizations. This series of short, intensive and inexpensive workshops is intended for board members, staff and volunteers of citizen councils and non-profit community organizations of all types. Instructors for each of the three-hour workshops are practitioners with both theoretical knowledge and practical experience in the topic area. After spending just a few hours in the classroom, participants can return to their organizations bringing with them new skills and ideas. The registration fee for Communities In Action workshops has been waived as a service to communities and their organizations.*

*Communities In Action and other training workshops can be offered by your organization in your own community. For information please contact Stan Rosenberg, (413)545-3420.*

*To register, please read the general information on pages 1 and 2, and fill in the registration form in the center fold of this catalog. Or register in person in the Lobby of Hills House North, UMass/Amherst.*

## **Accountability Organizing—How To Do It WS35**

**Greg L. Speeter: Community Organizer/Representative, Holyoke-Chicopee Council for Children**

Describes a method of holding elected officials (be they student council representatives, school committee members, state representatives, etc.) accountable to the stated concerns of a constituency. Workshop is based on the successes and failures of the "Children's Campaign, '74." Workshop process includes building a "citizens platform" (through public hearings and community organization techniques); determining candidate commitment to the platform; developing a report card for the candidate's responses to the platform and methods of holding the elected candidate accountable, through group pressure, to his/her commitments. Monday, January 3, 1977, 7-10 p.m., \$5.

## **Setting Up Resource Systems WS36**

**Robert L. Lynch: Consultant, Arts Extension Service, Division of Continuing Education**

In every type of social art or other service situation, effective services can be rendered only after an effective resource and information system has been developed. This workshop explores, through round table discussion, types of resource systems, pros and cons of resource tools, creating a self-sustaining, inexpensive information flow and methods of gathering, keeping, updating and distributing information. Legal ramifications, competition and individual problems are included. Tuesday, January 4, 1977, 7-10 p.m., \$5.

## **Over-Simplified Accounting WS37**

**Caron H. Van Gilder: M.A., Arts Administration; Consultant, Arts Extension Service, Division of Continuing Education**

A microcosmic accounting workshop for small organizations. Simplified budgeting, setting up income and expense accounts, an overview of bookkeeping, financial reporting and how to control budgets. For organizations with budgets of \$10,000 to \$200,000. Wednesday, January 5, 1977, 7-10 p.m., \$5.

### **The Planning Process—Management by Objectives WS38**

**Donna J. Stephenson: Consultant, Arts Extension Service, Division of Continuing Education**

Using a results-oriented system, develops a working understanding of the fundamentals of objectives; what they are and why we care about them. Participants learn to articulate objectives which reflect the purpose of an organization. These objectives can be used for planning or re-defining programs and evaluating program progress. It is recommended that this workshop be taken in conjunction with the Long-Range Planning and Evaluation Workshops. Thursday, January 6, 1977, 7-10 p.m., \$5.

### **Organizing Community Dialogue WS39**

**Stan Rosenberg and Lin Riotto: Coordinators, Great Decisions Program, Division of Continuing Education**

Using the Great Decisions Program as a model, workshop focuses on developing skills required to launch a community discussion program. Subjects include choosing the material, identifying constituencies and potential participants, marketing the program, organizing the discussion environment, collaboration among community organizations and facilitating discussion. Participants can expect to learn skills that are applicable to types of community efforts other than discussion programs. Saturday, January 8, 9:30 a.m.-12 noon, FREE.

### **The Politics and Economics of Human Services—Who The Helping Profession Helps WS40**

**Greg L. Speeter, Community Organizer/Representative, Holyoke-Chicopee Council for Children**

Lecture/discussion covers roles and functions of various human service agencies; their effect or lack of effect on "clients", providers, politicians and corporate leaders; and alternative methods of providing services or preventing problems. Monday, January 10, 1977, 7-10 p.m., \$5.

### **Improving PR and Media Coverage for Your Organization WS41**

**Robbie Gordon: Free Lance Writer, Journalist, Graphic Artist**

Focuses on how to write press releases so the press won't bury your story; how to create interest in your group; quick, inexpensive and effective methods of publicity (including promotional campaigns, leaflets and newsletters, and the utilization of free public access media forums). Major thrust is on the nuts and bolts of publicity and on viewing your organization from the press' perspective. It is recommended that this workshop be taken in conjunction with The Written Word and Production of Publications. Tuesday, January 11, 1977, 7-10 p.m., \$5.

### **Long-Range Planning WS42**

**Nan S. Levinson: Consultant, Arts Extension Service, Division of Continuing Education**

Introduction to long-range planning as a management tool; case study will be used to learn techniques such as brain-storming, force field analysis, flow charts and responsibility charts. Practical application to community organizations will be stressed. It is recommended that this workshop be taken in conjunction with those on objectives and evaluation. Wednesday, January 12, 1977, 7-10 p.m., \$5.

### **Evaluating Community Programs WS43**

**Norma Friedman: Director, Kultutama, Inc. (non-profit community arts organization in Holyoke)**

Focuses on the theoretical and practical aspects of community program evaluation. Introductory workshop is geared toward the volunteer or administrator who is programming in his/her community, be it educational, recreational, social, etc. Evaluation techniques discussed with emphasis on theory rather than the specifics of each technique. Emphasizes idea



of evaluation as a continuous process with suggestions, exercises, discussion and a bibliography. It is recommended that this workshop be taken in conjunction with those on Long-Range Planning and Management by Objectives. Thursday, January 13, 1977, 7-10 p.m., \$5.

#### **The Written Word WS44**

**Nan Levinson and Bob Lynch: Consultants, Arts Extension Service, Division of Continuing Education**

Participatory workshop for those who have difficulty writing for organizational purposes; includes "how to's" of letter writing, press releases, proposals, brochures and reports. Critique method also employed. Participants are urged to bring samples of their work. It is recommended that this workshop be taken in conjunction with Improving Media and PR Coverage for Your Organization and Production of Publications. Monday, January 17, 1977, 7-10 p.m., \$5.

#### **"They"—Recruiting and Placing the Volunteer WS45**

**Donna J. Stephenson: Consultant, Arts Extension Service, Division of Continuing Education**

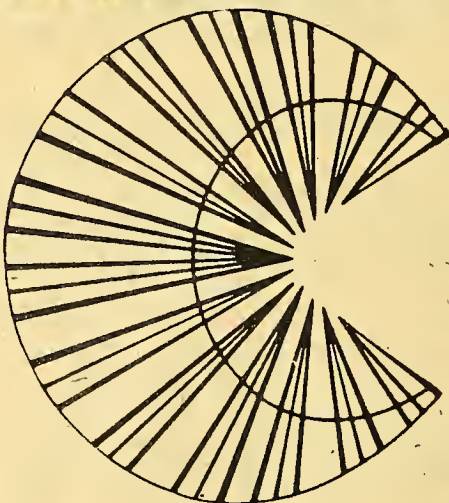
Using discussion and role play as a base, participants examine the process of recruitment including interviewing skills. Workshop addresses the skills necessary to resolve problems. Tuesday, January 18, 1977, 7-10 p.m., \$5.

#### **How To Put Together A "Yellow Pages" for Social Change WS46**

**Greg L. Speeter and Robbie Gordon: Co-Organizers, Holyoke-Chicopee Area Children's Yellow Pages**

A group of citizens assembled a "Children's Yellow Pages", an easy-to-read 102-page analysis of children's problems, listing of resources and plans for citizen involvement to prevent children's problems. Workshop describes how to assemble a yellow pages on any topic and how to mobilize a community around various problems. Includes developing a constituency, data gathering, issue building, organization of the manual, layout and graphics, distribution, methods of utilizing constituency in action organizing. Wednesday, January 19, 1977, 7-10 p.m., \$5.

## **DIALOGUE '77**



**A LOW COST, HIGH QUALITY RESOURCE FOR INDIVIDUALS AND ORGANIZATIONS**

Dialogue '77 offers a series of options which provide the opportunity to discuss issues of social concern. These issues include questions of community, leadership, the American Revolution and freedom. A reading and discussion format structures six of the workshops while the viewing and discussion of a film structures the other nine workshops. The approach is lively, informal, non-academic, and is planned to interest people from various walks of life and engage them in discussions of current social issues. For additional information contact Dialogue '77, Division of Continuing Education, 31 Hills House North, University of Massachusetts, Amherst, MA 01002, phone (413) 545-3420.

### **Production of Publications WS47**

**Lorraine Bogartz: Coordinator; Continuing Education Bulletins**

**Robbie Gordon: Free Lance Writer, Journalist, Graphic Artist**

Presents skills useful in producing publications for the purposes of informing a target audience and communicating with some precision both verbally and graphically. Includes preparation of copy, design and layout, and working with printers. Some focus on how to save money, and on how to get the job done without getting bogged down in details such as color choices, use of expensive camera work or impossible deadlines. Thursday, January 20, 1977, 7-10 p.m., \$5.

## **SCHOOL COMMITTEE WORKSHOPS**

*The following school committee workshops comprise a pilot program designed in consultation with Western Massachusetts School Committee members and others who are closely involved with the governance of public schools. The series will provide an opportunity to discuss school-related issues in the context of Western Massachusetts communities with the purpose of improving the effectiveness of school committees. The panel members for each workshop are practitioners who are involved with school and public policy decisions on a day-to-day basis.*

*Each of the workshops costs \$8. If all five workshops are registered for with the registration form in the center of this catalog, a special reduced rate of \$35 is the total cost. (For school committee chairpersons, the cost is \$32.) Groups registering for the whole series of five workshops may send a different representative to each of the five workshops if they wish. Those registering for the series at a reduced rate should use the following title and number:*

### **Workshop VI All Five School Committee Workshops WS53**

#### **Workshop I Role of Chairperson; School Committee Relationship With Superintendent WS48**

The conduct of meetings, agenda preparation, the open meeting law, conflict of interest law. Discussion of the working relationship between the School Committee and Superintendent, and the evaluation of the performance of the Superintendent. Tuesday, January 11, 1977, 7-10 p.m., \$8; special to chairpersons of school committees for this workshop only, \$5.

#### **Workshop II Fiscal Autonomy, Budgets, Finances WS49**

Fiscal autonomy of school committees in Massachusetts, understanding of budgets, mechanics of budget hearings, the problems of making financial decisions in inflationary times, and the facts of state reimbursement. Thursday, January 20, 1977, 7-10 p.m., \$8.

#### **Workshop III Personnel Decisions, Public Participation, Controversy WS50**

Focuses on laws and decisions related to appointment, tenure and dismissal of personnel; presents ways of providing for public participation in the formulation of school-related decisions; discusses controversy and new directions. Saturday, January 29, 1977, 9 a.m.-12 noon, \$8.

#### **Workshop IV Collective Bargaining and Contract Administration WS51**

Emphasizes a variety of ways of organizing for the School Committee side of negotiations, as well as coping with legal language and knowing when you need outside help. Focuses on grievances and grievance procedures. Saturday, February 5, 1977, 9 a.m.-12 noon, \$8.

#### **Workshop V School Committees and the State; Special Education, Sources of Help for School Committees WS52**

Covers relationship between School Committees and the Department of Education, and School Committees and the Legislature. Emphasizes the costs, limits and uncertain areas of Special Education. Includes information on sources of help available to School Committees. Wednesday, February 16, 1977, 7-10 p.m., \$8.

# CREDIT COURSE GENERAL INFORMATION

## ADMISSIONS

Any person who has graduated from high school or who has a certificate of General Educational Development is entitled to enroll in undergraduate courses offered by the Division of Continuing Education at the University of Massachusetts/Amherst. The Division assumes that the student will accurately assess his or her ability to take a college level course. It is the student's responsibility to observe prerequisites for individual courses. **Enrollment does not imply acceptance into a degree program.**

In accordance with University policy, University of Massachusetts students under academic suspension or academic dismissal may not enroll in credit courses offered by the Division of Continuing Education.

Courses taken during Wintersession will appear on the student's transcript as Fall 1976 credit.

## SCHEDULE

Credit courses will begin on Monday, January 3 and end Saturday, January 22. January 14 is a holiday and classes will not be held.

## REGISTRATION

To register by mail for credit courses simply remove and complete the form printed on the inside of the Wintersession catalog cover. Mail registration form and full remittance to:

Division of Continuing Education  
AE 77-5  
P.O. Box 835  
Amherst, MA 01002

Make checks payable to Continuing Education, AE 77- 5. All registrations must include a \$5 registration fee, charged once. Deadline for mail registration is December 22 postmark. Mail registrations will be confirmed by return mail late in December. Room assignments will be included in mail confirmation. Class sizes are limited, so register early.

To register in person for credit courses come to the Continuing Education Records Office in the lobby of Hills House, UMass/Amherst. Office hours are:

Monday-Thursday 8:30 a.m.-7 p.m.  
Friday 8:30 a.m.-5 p.m.  
Saturday 10 a.m.-1 p.m.  
(Closed holiday weekends)  
Phone: 545-3653.



## FEES & EXPENSES

The course fee for each three credit course is \$105. Massachusetts residency does not affect the course fee. Any other course fees are as stated in the course description.

|                                                                                                           |       |
|-----------------------------------------------------------------------------------------------------------|-------|
| Course fee (for a three credit course)                                                                    | \$105 |
| Registration fee<br>(charged once and not refundable unless course is canceled)                           | \$ 5  |
| Change of program fee<br>(charged for each change recorded)                                               | \$ 2  |
| Laboratory fee—assessed after beginning of course. Fee varies and is indicated in the course description. |       |

### Refund Schedule

|                     |            |
|---------------------|------------|
| January 3-January 7 | 50% refund |
| After January 7     | NO REFUND  |

**Financial Aid**—Only those students who have received financial aid during the fall semester, 1976, will be considered for financial aid during Wintersession. Those eligible and interested should give their names to Joan Eignor, 100A, Hills North, University of Massachusetts, Amherst, MA 01003.

## CHANGE OF PROGRAM

**Students wishing to make changes in their programs** must formally notify the Division in writing of all Adds, Drops, and Withdrawals. Failure to use proper procedure could result in an "F" being recorded as a final grade. Intent to audit or use the pass/fail option is considered a change of program.

**Deadlines for Program Changes**—For three week credit sessions, program change deadlines are determined on a proportional basis. After classes begin, students wishing to add, drop, audit or use the pass/fail option must secure approval of the Director of Continuing Education, Hills North.

## OTHER IMPORTANT INFORMATION

**Cancellations**—Continuing Education courses are funded solely by student fees. In the event that instructional costs cannot be met, any course may be canceled at the discretion of the Division. Students who are affected by a course cancellation will be notified by mail. Students not wishing to enroll in an alternative course will receive a full refund.

In the event of severe weather conditions or other emergencies, it may be necessary to cancel classes. Announcements will be made over local radio stations.

The Division reserves the right to cancel, add, or combine sections of courses listed in this catalog or to change instructors as necessary.

**Textbooks & Parking**—See Credit-Free General Information, page 1, under "Reading Material" and "Parking".

**NOTE:** Academic information contained in this supplement is abbreviated. Students are responsible for acquiring the general information contained in the Spring 1977 Continuing Education Catalog. Necessary academic information includes explanations of UMass credit, transcript requests, degrees, matriculation policy, core requirements, individualized study, auditing, and the pass/fail option. Catalogs are available in the Continuing Education Records Office, Hills House Lobby, UMass, 545-3653. Mail-in registrants will receive a catalog by return mail.

# CREDIT COURSES

All courses are for three credits unless otherwise noted in the course description.

## Basic Studio (Drawing Emphasis) (C)

### ART 104A

Introduction to visual concepts through a combination of formal representations and laboratory experience. Emphasis is on developing understanding of divergent points of view in art rather than the development of skills or creative accomplishments. MTWTF, 9 a.m.-12 noon and 1-3 p.m.

## Basic Studio (Design Emphasis) (C)

### ART 104B

Introduction to visual concepts through a combination of formal representations and laboratory experience. Emphasis is on developing understanding of divergent points of view in art rather than the development of skills or creative accomplishments. MTWTF, 9 a.m.-12 noon and 1-3 p.m.

## Modes of Film Communication

### COMSTU 190B

Lecture, discussion and film screenings provide a basic introduction to the nature and the several functions of film, and an examination of both narrative and non-narrative approaches to film. Basic grounding in design and function of contemporary film forms. MTWTF, 9 a.m.-12 noon. Lab fee: \$10.

## Advanced Public Speaking

### COMSTU 201

Practical communication. For students who want to go beyond the General Rhetoric Program in developing their ability to communicate ideas. Emphasis on one-to-group communication. MTWTF, 1-3 p.m.

## Geology and Man (E)

### GEOL 105

Evidence for selected mineral-forming processes; minerals in industry; developments in mineral research and technology; geologic considerations in such engineering works as mines, foundations, tunnels, waterways, and airfields. MTWTF, 9 a.m.-12 noon. Lab fee: \$3.

## Development of American Civilization, 1876 On (C)

### HIST 151

A survey of the American national growth. Topics covered include social change, immigration, and the emergence of industrial, urban society. Includes the evolution of American politics from the laissez-faire ideas and limited foreign commitments of the late 19th Century to the nation's present-day welfare state and global diplomacy. MTWTF, 9 a.m.-12 noon.

## Algebraic Review

### MATH 101

A rapid review of algebraic manipulations and definitions utilized in calculus. Topics include common subsets of the real numbers; sums, products, and quotients of polynomials; factoring, rational expressions; exponent and radicals; linear and quadratic equations; radical equations; linear and quadratic inequalities; equations and inequalities involving absolute values. MTWTF, 9-10 a.m. Credit: 1. Course fee: \$35.

## Analytic Geometry with Elementary Functions

### MATH 102

An introduction to the function concept and analytic geometry. Topics include relations and functions; one-to-one functions and their inverses; linear, quadratic, and other polynomial

functions; exponential and logarithmic functions; lines; conic sections. Prerequisite: Math 101. MTWTF, 11 a.m.-12 noon. Credit: 1. Course fee: \$35.

### **Precalculus Trigonometry**

#### **MATH 103**

An introduction to trigonometry covering topics considered essential for standard calculus. Topics include definitions and graphs of cosine, sine, tangent, cotangent, secant, and cosecant; essential identities; introductory triangle trigonometry. Prerequisite: Math 102. MTWTF, 1-2 p.m. Credit: 1. Course fee: \$35.

### **Philosophical Approaches to Science (E)**

#### **PHIL 240**

An introduction to the results of philosophical analysis of scientific practice, and the bearing of these results on a general description of scientific methodology. MTWTF, 1-3 p.m.

### **Child Behavior and Development (D)**

#### **PSYCH 260**

Psychological development of the child, including theories, methods, and data of child behavior studies. Prerequisite: Psych 101. MTWTF, 9 a.m.-12 noon.

### **Educational Psychology (D)**

#### **PSYCH 301**

Psychological facts and principles of development, learning, and measurement as applied to educational situations. Prerequisite: Psych 101. MTWTF, 1-3 p.m.

### **Language and Writing (B)**

#### **RHET 100G**

How words and styles are chosen to express ourselves and our world, with particular attention to the written language. Varied opportunities for written expression on different subjects for different purposes and audiences. Emphasizes responsible choice in the language used in both academic and everyday life. MTWTF, 9 a.m.-12 noon.

### **Conversational Spanish**

#### **SPAN 250, 251, 252, 253**

Directed free conversation. Improves the students' fluency in Spanish. No readings required. Prerequisite: Span 180/181 or equivalent speaking ability. NOTE: None of the conversation courses can be taken concurrently. Span 250: MTWTF, 9-10:30 a.m. Span 251: MTWTF, 10-11:30 a.m. Span 252: MTWTF, 10-11:30 a.m. Span 253: MTWTF, 11 a.m.-12:30 p.m. Credit for each: 1. Course fee for each: \$35.

### **Lives in Tension: Ida Wells, Emma Goldman, and Agnes Smedley**

#### **WOST 190Q**

Using the autobiographical writings of Ida Wells, Emma Goldman and Agnes Smedley, explores their reasons for becoming political activists. Uses the political writings of these women to explore the exact nature of tension, and when it arises. Considers an analysis of women's oppression and the more general analysis of a people's oppression. MTWTF, 1-3 p.m.

---

## **FORESTRY 225/525**

This course is included in Wintersession programming especially for University Forestry majors. Continuing Education students may register *only* with the written permission of the instructor. To register for this course, all students must come in person to the Continuing Education Records Office in the lobby of Hills House, phone 545-3653.

### **Elements of Forest Mensuration**

#### **FOREST 225/525**

Measurement of trees, stands, and forest products; practice in timber estimating and log scaling; selection and compilation of forest inventory data. By arrangement. Lab fee: \$10.



NOTE: Academic information contained in this supplement is abbreviated. Students are responsible for acquiring the general information contained in the Spring 1977 Continuing Education Catalog. Necessary academic information includes explanations of UMass credit, transcript requests, degrees, matriculation policy, core requirements, individualized study, auditing and the pass/fail option. Catalogs are available in the Continuing Education Records Office, Hills House Lobby, UMass, 545-3653. Mail-in registrants will receive a catalog by return mail.

---

# VOLUNTEER MANAGEMENT WORKSHOPS

*We live in a society that has always depended on volunteers of different kinds—some who can give money, others who give time, and a great many who freely give their special skills, full-time or part-time. If you look closely, you will see that almost anything that really matters to us, anything that embodies our deepest commitment to the way human life should be lived and cared for, depends on some form—more often many forms—of voluntarism.*

—Margaret Mead

Designed by the National Center for Voluntary Action with funds from the W.K. Kellogg Foundation, Volunteer Management Workshops concentrate on improving the quality and performance of volunteer leadership and management. The workshops were designed by practitioners for practitioners and consist of successful techniques, strategies and methods for volunteer management. Participants can expect to return to their organizations with exciting new ideas and skills to improve the quality of the volunteer experience and the contribution volunteers make toward the meeting of organizational goals.

For further information about the workshop program, contact Stan Rosenberg, Program Coordinator, at 314 Hills House North, University of Massachusetts, Amherst, MA 01003, phone (413) 545-3420.







# WINTERSESSION 1977

|                                        |  |                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                                                                                                                                                                                                                                                                                                                                                                                             |  |
|----------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Name                                   |  | CZ-A05                                                                                                                                                                                                                                                                                                                                                                                      |  | LAST NAME                                                                                                                                                                                                                                                                                                                                                                                   |  | FIRST NAME                                                                                                                                                                                                                                                                                                                                                                                  |  | INITIAL                                                                                                                                                                                                                                                                                                                                                                                     |  | STUDENT NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> |  |                                                                                                                                                                                                                                                                                                                                                                                             |  |
| Home Address                           |  | BA1                                                                                                                                                                                                                                                                                                                                                                                         |  | NUMBER & STREET                                                                                                                                                                                                                                                                                                                                                                             |  | CITY                                                                                                                                                                                                                                                                                                                                                                                        |  | STATE                                                                                                                                                                                                                                                                                                                                                                                       |  | ZIP CODE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> |  |                                                                                                                                                                                                                                                                                                                                                                                             |  |
| Home Tel.                              |  |                                                                                                                                                                                                                                                                                                                                                                                             |  | Area Code                                                                                                                                                                                                                                                                                                                                                                                   |  | If No Phone, Write "None"                                                                                                                                                                                                                                                                                                                                                                   |  | County or Citizenship (other than U.S.)                                                                                                                                                                                                                                                                                                                                                     |  | <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                                                                                                                                                                                                                                                                                                                                                                                             |  |
| Local Address (if different from home) |  | BA2                                                                                                                                                                                                                                                                                                                                                                                         |  | NUMBER                                                                                                                                                                                                                                                                                                                                                                                      |  | CITY                                                                                                                                                                                                                                                                                                                                                                                        |  | STATE                                                                                                                                                                                                                                                                                                                                                                                       |  | ZIP CODE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> |  |                                                                                                                                                                                                                                                                                                                                                                                             |  |
| BIRTH DATE                             |  | <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> |  | <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> |  | <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> |  | <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> |  | <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div> |  |

[illegible]

Division of Continuing Education, AE 77-5

Division of Continuing Education  
P.O. Box 835  
Amherst, Massachusetts 01002

TOTAL AMOUNT DUE AND ENCLOSED \$

Do not include lab fees in registration payment

Students are responsible for obtaining a copy of the complete Spring 1977 Continuing Education catalog and for reading the General Information section. This section contains academic, credit and degree information important to all students. To aid the student, a copy of the Spring 1977

|  | Alpha | Comp | Bus | Stud |
|--|-------|------|-----|------|
|  |       |      |     |      |

|       |      |     |      |
|-------|------|-----|------|
| Alpha | Comp | Bus | Stud |
|-------|------|-----|------|



## CAN SPRING BE FAR BEHIND?

Watch for the Division's new Spring 1977 catalog, complete with credit course information, Credit-Free Workshops, Communities In Action Workshops, and other opportunities for non-traditional learning. Included is all necessary information about being a student of the Division of Continuing Education, University of Massachusetts/Amherst. University courses are available to Continuing Education students on a space-available basis, so register early.

Division of Continuing Education  
P.O. Box 835  
Amherst, MA 01002

Non-Profit Organization  
U.S. POSTAGE PAID  
BULK RATE  
Amherst, MA 01003  
Permit Number 2

7  
NOV 23 1976

UNIV. OF MASS.  
ARCHIVES

The University of Massachusetts is fully accredited by the New England Association of Schools and Colleges.  
Factors of race, color, sex, age, religion, national origin or handicap are not considered in the admission or treatment of students or in employment,  
in accordance with Federal and State Laws.



# SPRING 1977

## DIVISION OF CONTINUING EDUCATION UNIVERSITY OF MASSACHUSETTS/AMHERST

A catalog of UMass Evening College Courses  
and Credit-Free Workshops  
for the evening, part-time or non-traditional student





# STAY WITH IT!

Keep your education going  
with Credit-Free Workshops.  
Workshop information begins  
on page 37.

*I am only one  
I cannot do everything*

But still I am one  
But still I can do something  
And because I cannot do everything  
I will not refuse to do the something I can do



Great Decisions  
213 Hills North UMass. Amherst MA 01002

Copyright © 1976 by Lin Maria Riotto

## INFORMATION REQUEST FORM

Name \_\_\_\_\_ Telephone \_\_\_\_\_

Address \_\_\_\_\_

Check appropriate boxes below.

- ☐ Please tell me of Great Decisions Discussion Groups that I can join in my own locale.
- ☐ Please send me a Discussion Leaders Guide containing hints for organizing and conducting an effective discussion group.

- ☐ I would like to organize a Great Decisions discussion group in my community/neighborhood.
- ☐ I would like to serve as the Great Decisions Community Coordinator for my community.

The Division of Continuing Education was founded in the fall of 1970, and since that time has extended the educational resources of the University of Massachusetts to students throughout the Commonwealth. In recognizing that education in a changing society is a lifelong necessity, the Division offers courses, programs, workshops, conferences, and services to a wide variety of non-traditional learners.

The Division's offerings fall mainly within two offices, Evening College and the Center for Continuing Studies. In addition to evening courses for credit, other credit offerings include the Teacher Education Program, the Second Bachelor's Degree Program, and the Bachelor of General Studies. Regular undergraduate University courses are also open to Continuing Education students on a space-available basis.

The Center for Continuing Studies offers a comprehensive Credit-Free Workshop Program each semester, as well as during the summer and the intersession period in January. Credit-Free programming includes offerings from the Arts Extension Service, Communities In Action, and East West Integral Studies. The Center for Continuing Studies also offers certificate/training programs.

The Division of Continuing Education is located on the UMass/Amherst campus in Hills House North. Specific office hours are listed in the information sections of this catalog.

## **TABLE OF CONTENTS**

|      |    |                                        |
|------|----|----------------------------------------|
| Page | 2  | Continuing Education Offices           |
|      | 3  | Index                                  |
|      | 4  | Evening College Calendar               |
|      | 5  | Evening College General Information    |
|      | 13 | Evening College Course Descriptions    |
|      | 22 | Bachelor of General Studies            |
|      | 23 | Evening College Registration Form      |
|      | 24 | Summer Session Information             |
|      | 26 | Credit-Free Workshop Registration Form |
|      | 28 | Day/Location Schedule                  |
|      | 29 | Schedule of Courses                    |
|      | 32 | Program Alternatives                   |
|      | 35 | Wintersession                          |
|      | 37 | Credit-Free Workshop Program           |
|      | 48 | Map Key                                |

## CONTINUING EDUCATION OFFICES

|                                                |                                                                                                                                                                                                                                      |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Office of the Director<br>545-3420             | William C. Venman, Director<br>William Krinsky, Deputy Director, Associate Director for Services<br>Kevin F. Grennan, Associate Director for Programs<br>Neil McBride, Assistant to the Director                                     |
| Evening College<br>545-3440                    | Charles E. Heller, Director                                                                                                                                                                                                          |
| Center for Continuing Studies<br>545-3410      | Merilee C. Neunder, Director, Credit-Free Workshop Program<br>Bernadine Y. Freese, Co-Director of Program Development<br>Carol B. MacKnight, Co-Director of Program Development                                                      |
| Special Programs                               | Arts Extension Service, Robert Lynch, Coordinator 545-2013<br>Citizen Involvement Training Project and<br>Communities In Action, Stanley Rosenberg, Director 545-3420<br>Technical Guidance Center, Ruth Kreplick, Director 545-3420 |
| Student Services<br>545-3430                   | Joan P. Eignor, Director<br>Harry F. Neunder, Counselor<br>Garrett J. McAuliffe, Counselor                                                                                                                                           |
| Records and Registration<br>545-3653, 545-3430 | Irene Nagler, Registrar                                                                                                                                                                                                              |
| Bachelor of General Studies<br>545-3430        | Harry F. Neunder, Coordinator                                                                                                                                                                                                        |
| Business Office<br>545-3420                    | John Shea, Business Manager<br>Pat Kulis, Assistant Business Manager                                                                                                                                                                 |



# INDEX

## A

Accounting/13  
Adding a course/6  
Admissions  
    Credit-Free Workshops/37  
    Evening College/5  
Afro-American Studies/13  
Anthropology/13  
Art/13  
Arts Extension Service/32, 36  
Astronomy/13  
Auditing/7

## B

Bachelor of General Studies/22  
    Courses/13, 27  
    Degree/22  
Botany/14

## C

Calendar  
    Credit-Free Workshops/38  
    Evening College/4  
Cancellations  
    Credit-Free Workshops/37  
    Evening College/6  
Change of Program/6  
CLEP/8  
Communication Studies/14  
Communities In Action/32, 36  
Computer and Information Science/14  
Continuing Education Offices/2  
Continuing Education Unit (CEU)/32  
Core Requirements/7  
Counseling Services/11  
Credit/6, 7  
Credit-Free Workshop Descriptions/38-47  
Credit Options/7

## D

Day/Location Schedule/28  
Degrees/6  
Dependents Health Services Fee/10  
Dropping a course/6  
Dialogue '77/33

## E

Economics/14  
Education, School of  
    Courses/15  
    Pass/Fail Policy/8  
English/16  
Entomology/16  
Evening College Courses  
    Descriptions/13-21  
    Wintersession listing/36  
Expenses/8

## F

Fees/Expenses  
    Credit-Free Workshops/37  
    Evening College/8  
Financial Aid Representative/11  
Financial Assistance/11  
Fine Arts Fee/9  
Food and Agricultural Engineering/16  
Food and Resource Economics/16  
French/16

## G

General Business and Finance/16  
Geology/17  
German/17  
Grantsmanship seminar/47  
Great Decisions/32, inside front cover

## H

Health Insurance Fee/9  
Health Services Fee/9  
History/17  
Holyoke  
    Counseling/11  
    Parking/10  
    Registration/4, 5  
    Textbooks/10  
Hotel, Restaurant and Travel  
    Administration/17

## I

I.D. Cards/10  
Individualized Study/7  
Industrial Engineering and Operations  
    Research/17

## L

LEEP/12  
Legal Studies/17  
Library Science Program/33  
Linguistics/18

## M

Mail Registration  
    Credit-Free Workshops/37, 38  
    Evening College/4, 5  
Management/18  
Map and Key/48, inside back cover  
Mathematics/18  
Matriculation Policy/6  
Music/19

## N

Nursing/19

## O

Office Hours  
    Counseling/11  
    Registration/4, 5, 37  
Optional Fees/9  
Orientation for CE Students/4, 11  
Overloads/7

## P

Parking/10  
Pass/Fail/8  
Philosophy/19  
Physical Education Fee/10  
Physics/19  
Picture I.D./10  
Plant and Soil Sciences/19  
Political Science/20  
Program Alternatives/32  
Psychology/20

## R

Refunds/  
    Credit-Free Workshops/37  
    Evening College/4, 9  
Registration  
    Credit-Free Workshops/37, 38  
    Evening College/4, 5  
Registration Forms  
    Credit-Free Workshops/26  
    Evening College/23  
Registration Office/5  
Response Programming/7  
Rhetoric/20

## S

Schedule of Courses/29-31  
Second Bachelor's Degree/33  
Sociology/21  
Spanish/21  
Student Services/11  
Summer Session/24, 25  
Suspended Student Policy/5  
School Committee Workshops/16, 36

## T

Teacher Education Program/34  
Technical Guidance Center/34  
Textbooks/10  
Toward Tomorrow/47  
Transcripts/6

## U

University Financial Aid/11

## V

Veterans Benefits/12

## W

Wintersession/34-36  
Withdrawal Deadlines ("W")  
    Credit-Free Workshops/37  
    Evening College/4, 6  
Women's Studies/21

## Z

Zoology/21

# EVENING COLLEGE CALENDAR

The CREDIT-FREE WORKSHOP Calendar may be found on page 38.

|                           |                        |
|---------------------------|------------------------|
| Tues., Wed., Thurs., Sat. | December 1-January 6   |
| Friday                    | January 11, 12, 13, 15 |
| Saturday                  | January 14             |
| Monday                    | January 15             |
| Wednesday                 | January 17             |
| Tuesday                   | January 19             |
| Monday                    | January 25             |
|                           | February 7             |
| Tuesday                   | February 8             |
| Monday                    | February 21            |
| Tuesday                   | February 22            |
| Tuesday                   | March 1                |
| Saturday                  | March 19               |
| Monday                    | March 28               |
| Monday                    | April 18               |
| Wednesday                 | April 20               |
| Wednesday                 | May 11                 |
| Thursday                  | May 12                 |
| Wednesday                 | May 18                 |
| Saturday                  | May 21                 |

Mail Registration  
 In-Person Registration/Amherst  
 Holiday (*Martin Luther King's Birthday*) No Registration  
 In-Person Registration resumes after holiday  
 In-Person Registration/Holyoke  
 Orientation for CE Students/Amherst-Hills Lobby (7:30 p.m.)  
 First day of classes & Late Registration begins  
 End Add/Drop Period (withdraw, no record)  
 Last day to sign up for Pass/Fail and Audit options  
 Beginning "W" Period (withdraw with record)  
 Holiday (*Washington's Birthday*) No Classes  
 Monday class schedule will be followed  
 Last day to drop courses with a "W" (withdrawn)  
 Last day to withdraw with a % refund\*  
 Last day to pay Health Services and Health Insurance Fees  
 Spring vacation begins after last class  
 Classes resume  
 Holiday (*Patriot's Day*) No Classes  
 Monday class schedule will be followed  
 Last day of classes  
 Final examinations begin  
 Last day of final examinations  
 University Commencement

## REGISTRATION INFORMATION

December 1-  
January 6

Mail Registration  
 \$5 Registration Fee  
 All Evening College courses

January 11, 12,  
13 & 15

In-Person Registration/Amherst  
 \$5 Registration Fee  
 All Evening College courses  
 Undergraduate UMass/Amherst courses (space-available basis only)  
 Location: Main Lobby, Hills House, UMass/Amherst  
 Time: Tues., Wed. & Thurs. 10 a.m.-4 p.m. & 6-8 p.m.  
 Saturday 10 a.m.-2 p.m. (January 14 is a holiday--no registration)

January 17

In-Person Registration/Holyoke  
 \$5 Registration Fee  
 All Evening College courses  
 Location: Building B, Room 347, Holyoke Community College, Holyoke, Massachusetts  
 Time: Monday, 9-11 a.m. & 5-7 p.m.

January 17-24

Students may continue to register for all Evening College offerings in which spaces remain.  
 Location: CE Records Office, Hills House, UMass/Amherst  
 Time: Regular Office Hours, see page 5.

January 25, 27,  
31 & Feb. 1

Late Registration/Holyoke  
 \$10 Late Registration Fee  
 All Evening College courses  
 Location: Building B, Room 201, Holyoke Community College, Holyoke, Massachusetts  
 Time: Tuesday (January 25) 6-7:30 p.m.  
 Thursday, Monday & Tuesday (Jan. 25, 31 & Feb. 1) 6-7:30 p.m.

January 25-  
February 7

Late Registration/Amherst  
 \$10 Late Registration Fee  
 All Evening College courses  
 Undergraduate UMass/Amherst courses (space-available basis only, written permission required)  
 Location: Main Lobby, Hills House, UMass/Amherst  
 Time: Monday-Thursday 9 a.m.-7 p.m.  
 Friday 9 a.m.-5 p.m.  
 Saturday 10 a.m.-1 p.m.

### \*REFUND SCHEDULE

|                       |           |
|-----------------------|-----------|
| January 26-February 8 | 80%       |
| February 9-15         | 60%       |
| February 16-22        | 40%       |
| February 23-March 1   | 20%       |
| After March 1         | NO REFUND |

\*Please see page 9 for further information on Refunds.

## REGISTRATION AND RECORDS

### Admissions

Any person who has graduated from high school or who has a certificate of General Educational Development is entitled to enroll in undergraduate courses offered by the Division of Continuing Education at the University of Massachusetts at Amherst. The Division assumes that the student will accurately assess his or her ability to take a college level course. It is the student's responsibility to observe prerequisites for individual courses. **Enrollment does not imply acceptance into a degree program.**

In accordance with University policy, University of Massachusetts students under academic suspension or academic dismissal may not enroll in courses offered by the Division of Continuing Education.

### Mail Registration

1. To register by mail simply complete the registration form in this publication and mail with full remittance to:  
Evening College, AE77-1  
Division of Continuing Education  
P.O. Box 835  
Amherst, MA 01002
2. Make checks payable to **Continuing Education AE77-1**. All registrations must include total course fees plus a \$5 registration fee.
3. Deadline for mail registration is January 6 postmark.
4. Mail registrations will be confirmed by return mail in mid January. Room assignments will be included in mail confirmation. Class sizes are limited, so register early.

### In-Person Registration

To register in person for Continuing Education courses in this catalog come to one of the following locations:

Main Lobby, Hills House, UMass/Amherst  
*Tuesday, Wednesday, Thursday, Saturday,*  
*January 11, 12, 13 & 15*  
*10 a.m.-4 p.m. and 6-8 p.m. (Tues., Wed., Thurs.)*  
*10 a.m.-2 p.m. (Saturday)*  
*(January 14 is a holiday--no registration)*

or come to:

Building B, Room 347  
Holyoke Community College  
Holyoke, Massachusetts  
*Monday, January 17*  
*9-11 a.m. and 5-7 p.m.*

### Registration, University Classes

#### Undergraduate

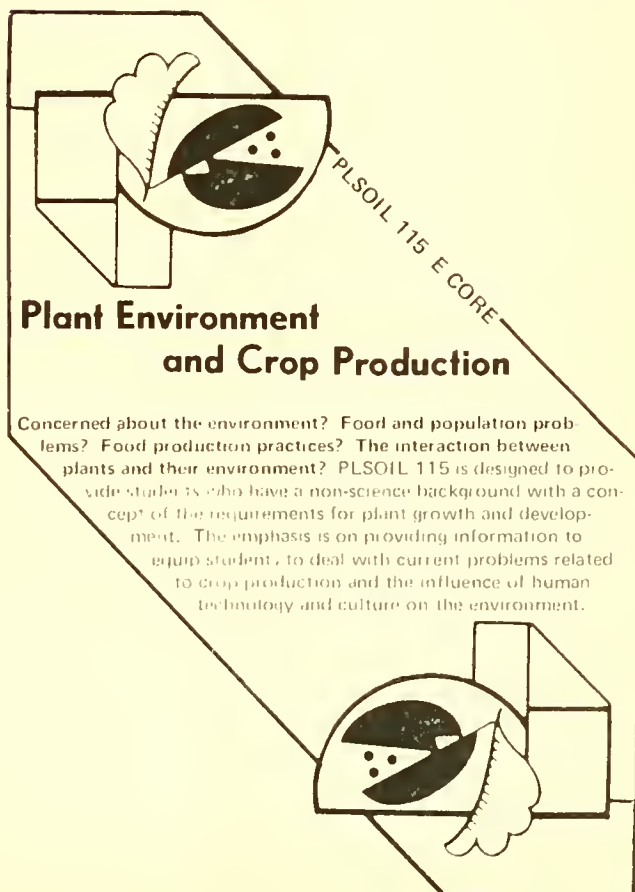
Regular *undergraduate* University of Massachusetts classes are available to Continuing Education students on a space-available basis. Students must appear in person (January 11, 12, 13 & 15, Hills House Main Lobby, see page 4 for time) to register for undergraduate University classes with space available. There will be no exceptions to this policy. Students may *not* register for University classes prior to January 11, nor during the period January 17-January 24.

### Graduate

The Division of Continuing Education *does not* register post baccalaureate students in *graduate* University courses except for those graduate courses offered in Continuing Education's Evening College Program. Undergraduate students wishing to register for graduate University courses may usually do so with the written permission of the instructor. Post-baccalaureate students wishing to register for graduate courses must complete a "Non-Degree Student Application" form in accordance with the Graduate School policy, which states that "admission to the Graduate School is to be prerequisite to enrollment in any UMass graduate course for credit or audit." Applications are available from the Graduate Admissions Office, Graduate Research Center, University of Massachusetts, Amherst, MA 01003. Registration for graduate University students will take place January 24, 1977, at Boyden Gymnasium, 9 a.m.-12 noon and 1:30-4:30 p.m. For further information concerning application and registration in graduate University courses, call the Graduate School at 545-0024.

### Records and Registration Office Hours

|                           |                      |
|---------------------------|----------------------|
| Monday-Thursday           | 8:30 a.m.-7:00 p.m.  |
| Friday                    | 8:30 a.m.-5:00 p.m.  |
| Saturday                  | 10:00 a.m.-1:00 p.m. |
| (Closed holiday weekends) |                      |
| Phone: 545-3653           |                      |



**Plant Environment  
and Crop Production**

Concerned about the environment? Food and population problems? Food production practices? The interaction between plants and their environment? PLSOIL 115 is designed to provide students who have a non-science background with a concept of the requirements for plant growth and development. The emphasis is on providing information to equip students to deal with current problems related to crop production and the influence of human technology and culture on the environment.



## Change of Program

Students must formally notify the Division of Continuing Education, *in writing*, of all Adds, Drops, and Withdrawals. Changing from one section to another of the same course is considered to be an Add and a Drop.

During the Add/Drop Period, January 25-February 7, students may add courses; students may also drop courses with no record. February 8 through February 22, dropped courses will be noted on the student record with a "W" indicating Withdrawn. After February 22, students needing to drop a course must petition the Director of Continuing Education for approval of a late "W". Failure to use proper procedure could result in an "F" being recorded as a final grade. Students dropping courses during the Refund Period will receive refunds only if proper procedures are followed. Please check the Evening College Calendar for the Refund Schedule and additional notations of Add, Drop and Withdrawal periods.

## Transcripts

Permanent records of all courses taken through the Division of Continuing Education are maintained by the Division, and are *not transferred automatically* to other offices on campus, such as the Registrar's Office or the Graduate Records Office. Requests for transcripts must be made in writing either by letter or by official Transcript Request Card. Be sure to include the complete address of the person or institution to whom the transcripts will be sent. When requesting a transcript sent to the Student Development Center, please specify if it is for a certification or credentials folder.

*Official transcripts* will be sent only to Registrars or Recording Officers of institutions and to recognized business addresses. *Student copies*, so designated, may be obtained by following the same procedure. The first transcript will be issued free of charge. There will be a \$1 charge for all subsequent transcripts.

Address transcript requests to:

Transcript Request  
Division of Continuing Education  
Hills House North  
University of Massachusetts  
Amherst, MA 01003

## Cancellations

Continuing Education courses are funded solely by the fees students pay. Unfortunately, each semester there are

courses in which enrollments are not sufficient to compensate faculty. These courses will be canceled at the discretion of the Division. To allow students time to enroll in other courses, decisions to cancel courses are made as soon as possible after in-person registration on the basis of the number of enrollments at the time. **Students are therefore urged to register as early as possible** in order to give as accurate an assessment as possible of the number of students who want to enroll in each course. Those students affected by course cancellations will be notified by mail. Students not wishing to enroll in an alternate course will receive a full refund as soon as it can be processed.

In the event of severe weather conditions or other emergencies, it may be necessary to cancel classes. Usually, when University day classes are canceled, evening classes are also canceled. Announcements will be made over the following radio stations:

Amherst—WTTT, WFCR, WMUA  
Greenfield—WHA1  
Hartford—WTIC  
Northampton—WHMP  
Orange—WCAT  
Springfield—WHYN, WACE, WSPR  
Ware—WARE  
Worcester—WTAG

The Division reserves the right to cancel, add, or combine sections of courses listed in this publication or to change instructors if necessary.

## CREDIT/DEGREES

### Credit

Credit offered through the Division of Continuing Education is resident University of Massachusetts credit unless otherwise stated. Credit courses numbered 500 and above are graduate level. Some double-numbered courses, such as COMSTU 225/525, may be taken for either undergraduate or graduate credit. It is important that students indicate only one of these numbers—the one corresponding to the level of credit desired.

### Degrees

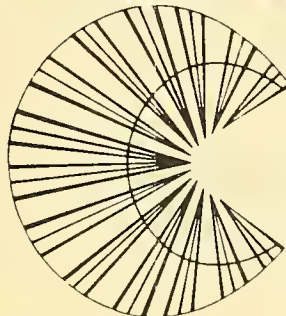
The Division of Continuing Education offers part-time study which may lead to any undergraduate degree currently offered by the University of Massachusetts. The Bachelor of General Studies Degree, also conferred by the University of Massachusetts, is a degree unique to the Division of Continuing Education. See BGS, page 22.

### Matriculation Policy

The Division of Continuing Education has an open admissions policy requiring only a high school diploma, or its equivalent, for enrollment in undergraduate courses. Matriculation, or acceptance as a degree candidate, however, is based on a satisfactory performance (grade point average of 2.0 or better) in a specified number of University of Massachusetts courses, and declaration of a program of study.

Students not planning to transfer into the University's full-time program and who anticipate receiving a baccalaureate degree through the Division of Continuing Education should apply for matriculated status as soon as they have completed the appropriate number of credits (see next page).

## DIALOGUE '77



A LOW COST, HIGH QUALITY RESOURCE  
FOR INDIVIDUALS AND ORGANIZATIONS

Dialogue '77 offers a series of options which provide the opportunity to discuss issues of social concern. These issues include questions of community, leadership, the American Revolution and freedom. A reading and discussion format structures six of the workshops while the viewing and discussion of a film structures the other nine workshops. The approach is lively, informal, non-academic, and is planned to interest people from various walks of life and engage them in discussions of current social issues. For additional information contact Dialogue '77, Division of Continuing Education, 314 Hills House North, University of Massachusetts, Amherst, MA, phone (413) 545-3420.

Application for matriculated status at the earliest possible stage will allow the Division to do a better job of helping the student in the planning of his or her program of study, as well as promote a greater awareness within the Division of what courses should be offered both on and off campus to meet student needs.

Bachelor of General Studies (BGS) students must have an approved BGS Proposal on file with the Division of Continuing Education prior to matriculation.

| Number of Transfer Credits | Number of UMass/CE Credits Needed to Apply for Matriculated Status |
|----------------------------|--------------------------------------------------------------------|
| 60 or more                 | 15                                                                 |
| 48-59                      | 18                                                                 |
| 36-47                      | 21                                                                 |
| 24-35                      | 24                                                                 |
| 12-23                      | 27                                                                 |
| 0-11                       | 30                                                                 |

Further information and an application may be obtained from the Records Office of the Division of Continuing Education, located in the lobby of Hills House, telephone (413)545-3653.

## Core Requirements

The University of Massachusetts core is a block of at least 33 credits within the specified 120 credits needed for graduation. Students must complete core requirements by taking certain specified courses in several fields of learning. An introduction to the humanities and fine arts, for instance, may be fulfilled by the successful completion of at least three courses chosen from those identified by the letter "C" after the course title. Core courses are distributed as follows.

- B Core: 6 credits in written and spoken English, usually offered by the Rhetoric Department. These courses are identified by the letter "B".
- C Core: 9 to 12 credits in humanities or fine arts, generally from the departments of Afro-American Studies, Art, Classics, Comparative Literature, English, History, Linguistics, Music, Philosophy and designated foreign literature courses. These are identified by the letter "C".
- D Core: 9 to 12 credits in social or behavioral sciences, generally from the departments of Afro-American Studies, Anthropology, Economics, Political Science, Psychology, and Sociology. These are identified by the letter "D".
- E Core: 9 to 12 credits in mathematics or natural sciences, generally from the departments of Astronomy, Botany, Chemistry, Mathematics, Physics, Statistics, and Zoology. These are identified by the letter "E".

*Note: Consult with a Student Services counselor to determine if the chosen major is one that requires 12 credits in each of the "C", "D" and "E" areas.*

Courses in this catalog which may be applied toward the completion of University core requirements are designated by a capital letter, in parentheses, following course titles as they appear in the Academic Extension course descriptions.

## Overloads

The Division of Continuing Education exists to help meet

the needs of part-time students and uses an open admissions policy requiring only high school graduation or its equivalent. Policy therefore normally restricts Continuing Education students to enrollment in a maximum of three separate courses in any one semester.

Exceptions to this policy will be considered only if students fill out a petition for overload (available from any student services counselor) and supply transcripts or grade reports showing prior performance in college or university courses. These records and the petition will be assessed by a counselor who will provide the student with a letter approving or denying the overload request.

Please be aware that late applications for overload or delay in presenting necessary documents may prevent students from registering before the end of the add-drop period.

Continuing Education students may register for regular University of Massachusetts courses if space is available.

## Credit Options

### Individualized Study

Individualized study is designed to provide an opportunity for Continuing Education students to fulfill credit requirements by working on an individual basis with an instructor.

Individualized study contracts may be undertaken in a special problems area, or for approved University courses.

Students may register at any time for individualized study by completing an Individualized Study Contract, available from the Division of Continuing Education, and by obtaining the necessary signatures. In each case, the program of study should be formulated by mutual agreement between the faculty member and the student. Such courses of study must be completed within one calendar year of the registration date or an incomplete will be recorded and computed as a 0.0 in the student's cumulative average. An individualized study fee of \$5 is charged for each registration in addition to the standard per credit fee of \$35.

Graduate level Individualized Studies must be approved by the Dean of the Graduate School. Return completed contracts to the Coordinator of the Individualized Study Program prior to payment.

Information for individualized study may be obtained from Garrett J. McAuliffe, the Coordinator of Individualized Study Programs, Room 101, Hills North, 545-3430.

### Response Programming

Any organization or group of individuals may make a request for a specific course to be offered through the Division. Courses can be arranged to suit most schedules and may be offered in any suitable location as long as there is sufficient enrollment. Response courses can be requested by contacting the Director of Evening College. Phone numbers may be found on page 2.

### Auditing

Students may choose to audit a course and have that audit recorded on the permanent record as an "AUD" provided that: 1) the student officially registers and pays all course fees; 2) the student officially elects the class as an audit (all requests must be submitted to the Continuing Education Records Office by the end of the Add/Drop Period, Feb. 7, 1977); 3) the student satisfies the instructor regarding his or her preparation and motivation for auditing the class; 4) the student satisfies all the criteria for



a successful audit as stipulated in advance by the instructor.

### College Level Examination Program (CLEP)

CLEP is a national program of credit-by-examination that offers the opportunity to obtain recognition for college-level achievement, no matter when, where, or how learning has been acquired—by means of formal or informal study. If the results are acceptable, college credit is given, applicable toward an undergraduate degree.

CLEP general exams are available in the areas of English Composition, Humanities, Social Studies, History, Natural Sciences, and Mathematics. There are over 30 subject exams in a wide variety of fields. All exams are given monthly on the University of Massachusetts/Amherst campus. Test fees are \$20 for one General or one Subject Exam; \$30 for two; and \$40 for any combination of three to five.

Further information and registration forms may be obtained from the Division of Continuing Education, 545-3430, or the Community Development Center, Berkshire House, 545-0333. In order to have the test scores sent directly to the Division of Continuing Education, place the number "3945" in the Score Report College Code box on the CLEP registration form.

### Pass/Fail Option, Continuing Education

Continuing Education students are eligible to use a pass/fail option in one course each semester. The student may elect to take up to and including five University core requirement courses on a pass/fail basis. In a course in which a student chooses the pass/fail option, the instructor will not be informed that the course is being taken pass/fail. At the end of the sem-

ester the instructor will turn in the letter grade earned. At this time, if a grade of A through D has been reported, the Records Office will record either a "P" or the letter grade on the student's permanent record, whichever is more beneficial to the cumulative average of the student. **All requests to employ the Pass/Fail Option must be filed with the Continuing Education Records Office prior to the end of the Add/Drop Period (February 7, 1977).**

### Pass/Fail Policy, School of Education

The majority of courses given under the supervision of the School of Education, both graduate and undergraduate, are graded on a pass/fail basis only. This is not optional on the part of the student except in the following special case. Master's degree students enrolled at the University of Massachusetts are required by Graduate School policy to earn 18 graded credits during their 33-hour Master's program. A student eligible to receive a letter grade should make the request known to the instructor early in the semester so that the grade may be added to the roster at the end of the course.

Please do not request exceptions to the pass/fail policy. The School of Education understands that there may be a number of institutions which simply do not accept the pass/fail mark. In these cases, the student should contact the instructor and request a letter which states that the School of Education is on a pass/fail basis but indicates what the grade would have been if the student had been taking the course for a grade.

If further information is desired regarding the School of Education pass/fail policy, call or write Mike Schwartz, 125B Education Building, University of Massachusetts, Amherst, Massachusetts 01003, phone 545-2701.

## EXPENSES

Course fee for each three credit course is \$105. Massachusetts residency does *not* affect the course fee. *Any other course fees are as stated in the course description or in the Schedule of Courses.*

|                                               |              |
|-----------------------------------------------|--------------|
| <b>Course Fee (for a three credit course)</b> | <b>\$105</b> |
|-----------------------------------------------|--------------|

The following fees are not refundable except for officially cancelled courses. Explanations of optional fees are in the section following.

|                                                     |             |
|-----------------------------------------------------|-------------|
| <b>Registration Fee (charged once per semester)</b> | <b>\$ 5</b> |
| Required of all students                            |             |

|                                                        |             |
|--------------------------------------------------------|-------------|
| <b>Late Registration Fee</b>                           | <b>\$10</b> |
| Required of all students registering after January 24. |             |

|                                                                                                      |  |
|------------------------------------------------------------------------------------------------------|--|
| <b>Laboratory Fee (a limited number of courses)</b>                                                  |  |
| Assessed <i>after</i> beginning of semester. Fee varies and is indicated in the Schedule of Courses. |  |
| <i>Do not include with registration payment.</i>                                                     |  |

|                                  |             |
|----------------------------------|-------------|
| <b>Change of Program Fee</b>     | <b>\$ 2</b> |
| Charged for each change recorded |             |

|                                        |             |
|----------------------------------------|-------------|
| <b>Commencement Fee*</b>               | <b>\$10</b> |
| Assessed during semester of graduation |             |

|                                         |      |
|-----------------------------------------|------|
| <b>Optional Fees</b>                    |      |
| Arts Council Fine Arts Fee              | \$ 3 |
| Health Services Fee                     | \$46 |
| Health Insurance Fee                    | \$34 |
| Available only with Health Services Fee |      |
| Physical Education Fee                  | \$ 5 |
| Paid at Ticket Office, Boyden Gym       |      |
| Picture Identification Fee              | \$ 1 |

# PRACTICAL BEEKEEPING

Practical Beekeeping introduces the student to the biology and behavior of the honey bee, with an emphasis on those aspects which have some application to practical management. A method of management is presented and practical experience in handling bees is given in the labs. Students may, if they wish, purchase a hive with bees. This course is given in cooperation with the Department of Entomology on Thursday evenings for three credits.

ENT 226



## Refunds

Even though a student drops a course after in-person registration, instructional and other costs must be met. Therefore **Refunds** of course fees are adjusted according to the following schedule:

### Refund Schedule

|                       |           |
|-----------------------|-----------|
| January 26-February 8 | 80%       |
| February 9-15         | 60%       |
| February 16-22        | 40%       |
| February 23-March 1   | 20%       |
| After March 1         | NO REFUND |

Refunds for course drops made by mail will be computed according to the date of postmark.

There are two exceptions to the refund policy: (1) a student involuntarily called to military service before the completion of a course will be given a pro rata refund of course fees; (2) students enrolled in courses which are cancelled due to lack of enrollment will be given a full refund.

## Explanation of Optional Fees

The Division is pleased to be able to make available the following University services and programs for Continuing Education students. These programs and services are optional. Payment instructions for each are listed below.

### Fine Arts Fee

Each year the Arts Council brings to the Amherst campus some of the world's most renowned performing artists. Artists who will be performing during the 1976-77 season include: Chicago Symphony, Leontyne Price, PDQ Bach, Royal Winnipeg Ballet, Count Basie, Boston Symphony, Alwin Nickolaï Dance Co., Dave Brubeck, and Julian Bream. Payment of the Arts Council fee allows students to purchase tickets with a 50% discount.

### Health Services Fee

University Health Services staff are responsible for the direct provision of a wide range of integrated services. Primary care physicians serve as family doctors and coordinate the nature and extent of services to assure quality care, whether

it is provided in the Health Center or under the supplementary insurance program. Laboratory, x-ray, physical therapy, pharmacy, specialty clinics, inpatient facilities, and other services are also available at the Health Center.

The student health program also provides mental health consultation, including short-term and group psychotherapy, a dental program, health education activities in such areas as drug use, nutrition, common health ailments and human sexuality, and an environmental health and safety monitoring unit.

The Health Services Fee is \$46 for Spring semester only (effective date: January 27, 1977), and is payable to the Division at the time of registration. **Students must enroll for at least six credits to be eligible.**

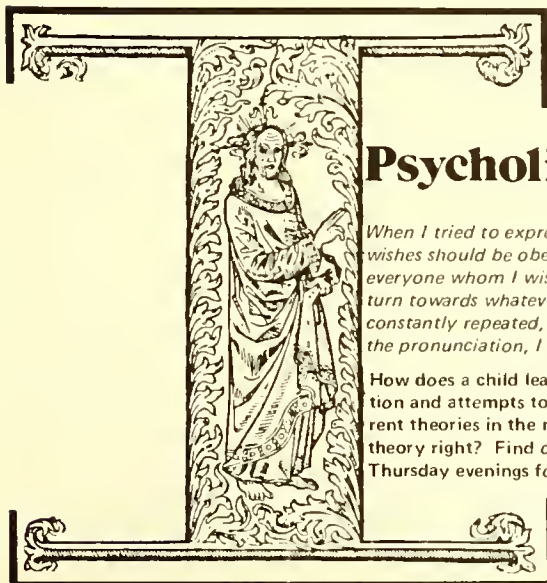
### Health Insurance Fee

The Chicago Insurance Company offers University of Massachusetts students a hospital, surgical, and medical program to supplement the on-campus care provided by University Health Services. This insurance provides protection from January 27, 1977, to August 31, 1977, for specific medical expenses due to injury or emergency illness which causes loss that commences while the policy is in force, including university holidays, summer vacation, and other times when the student is away during the insured period.

This insurance plan offers liberal benefits for services provided by participating physicians and hospitals. The Cooley Dickenson Hospital and groups of general and orthopedic surgeons have entered into an agreement with University Health Services to provide high quality services at no additional cost to the subscriber. Emergency treatment and *authorized* specialist services in a non-participating hospital and by a non-participating physician, however, are covered to \$5,000 per occurrence. The insurance brochure is available from the Division of Continuing Education or University Health Services.

**Note:** Services obtained outside the University Health Center must be authorized in advance by a physician participating in the health plan in order to receive coverage from this insurance.

The cost for January 27, 1977-August 31, 1977, is \$34. Students must pay the Health Services fee of \$46 in order



LING 211 CORE

## Psycholinguistics - Language Acquisition

*When I tried to express my meaning by crying out and making various sounds and movements, so that my wishes should be obeyed, I found that I could not convey all that I meant or make myself understood by everyone whom I wished to understand me.... I noticed that people would name some object and then turn towards whatever it was that they had named.... So, by hearing words arranged in various phrases and constantly repeated, I gradually pieced together what they stood for, and when my tongue had mastered the pronunciation, I began to express my wishes by means of them.*

— St. Augustine, *Confessions*

How does a child learn language? This course explores a number of current theories of language acquisition and attempts to evaluate them in the light of current data. Study includes the possible uses of current theories in the more practical fields of communications disorders and reading. Was St. Augustine's theory right? Find out. This course is offered in cooperation with the Department of Linguistics on Thursday evenings for three credits.

to purchase the insurance, the fee for which is payable to Continuing Education at the time of registration. Health insurance for the above period is available only to students who are registering for the 1976-77 academic year for the first time this spring—it is **not** available to students who were enrolled in Continuing Education in the fall 1976 semester and who were eligible for insurance and chose not to use that option.

#### Dependents Health Services Fee

Students who pay a Health Services fee are eligible to enroll their dependents (spouse and/or children) in the Health Services Program. The payment of this fee will allow the student's dependents to receive the same comprehensive health services presently available to students at the University Health Center. Interested persons should contact the Business Office of the University Health Center.

#### Physical Education Fee

Continuing Education students may pay a \$5 physical education fee, which entitles them to use facilities such as pools, bowling alleys, or gyms, and equipment if it is available. A locker or basket may be obtained on a space-available basis. All services and facilities are regulated by the School of Physical Education, and Continuing Education students are expected to conform to established policies.

Payment should be made to the Ticket Office in Boyden Gymnasium, and the receipt taken to the Intramural Office where an I.D. card will be issued.

#### Picture Identification Cards

Picture I.D. cards will be available to all Continuing Education students at a cost of \$1. These cards are not mandatory for all students, but are essential when charging books out of the University Library. A picture I.D. card also provides handy identification when on campus and allows the student to cash checks (\$25 maximum) at the Student Union.

All students wishing to obtain a picture I.D. card must go to the Continuing Education Records Office, Hills House Front Lobby, to obtain a receipt of \$1 payment and a verification of student number. Students will need a second form of identification when the picture is taken. Finished cards may be picked up in 24 hours at the Continuing Education Records Office. The cards will be validated each semester.

Students who already have a Continuing Education picture I.D. card from a previous semester may obtain a validation sticker for the spring semester at the Records Office once spring registration has been completed.

I.D. Office staff members will be available to take pictures for Continuing Education students during the following days and hours:

##### *In-Person Registration*

January 11, 12 & 13

Tues., Wed., & Thurs., 9 a.m.-4 p.m./169 Whitmore  
6 p.m.-8 p.m./Hills Main Lobby

##### *Prior to the first day of classes/169 Whitmore*

January 17-21 & 24

Monday-Friday, 9 a.m.-4 p.m.

##### *After classes start/169 Whitmore*

February 7 and thereafter

Monday-Friday, 9 a.m.-4 p.m.

Continuing Education students are urged to make every effort to obtain picture I.D. cards during the hours specifically set for them.

## Parking Costs

### Amherst

Any student who registers for a class held on campus between the hours of 7 a.m. and 6 p.m. and who plans to park a vehicle on the Amherst campus must either obtain a parking decal from the University Parking Office (room 1, Munson Hall), park in the Campus Center Parking Garage (on a fee per hour basis), or use metered space. The rates and privileges for parking are determined by the University. Access to all *legal* spaces in parking lots is not restricted after 6 p.m. or on weekends, and no fees need be paid for vehicles which will be parked during those times only.

### Holyoke

Campus parking requires a parking permit, applications for which may be obtained at in-person registration. Those who are registering by mail may request a parking permit application and it will be sent by return mail. The parking application may be taken to the Security Office, Building E, HCC, and a permit will be issued at no charge.

## Textbooks

### Amherst

The Textbook Annex of the University of Massachusetts stocks books for Continuing Education courses and has extended its hours for the convenience of Continuing Education students. The Annex is arranged alphabetically by department and numerically from the lowest course number to the highest course number within the department. Information on books will be posted in the Annex. Blue counter cards signify Continuing Education courses.

The University Store and Textbook Annex hours for spring are listed below.

|        |         | <i>Store</i>   | <i>Annex</i>   |
|--------|---------|----------------|----------------|
| Mon.   | Jan. 24 | 9 a.m.-9 p.m.  | 9 a.m.-5 p.m.  |
| Tues.  | Jan. 25 | 9 a.m.-9 p.m.  | 9 a.m.-9 p.m.  |
| Wed.   | Jan. 26 | 9 a.m.-9 p.m.  | 9 a.m.-9 p.m.  |
| Thurs. | Jan. 27 | 9 a.m.-5 p.m.  | 9 a.m.-9 p.m.  |
| Fri.   | Jan. 28 | 9 a.m.-5 p.m.  | 9 a.m.-5 p.m.  |
| Sat.   | Jan. 29 | 11 a.m.-3 p.m. | 11 a.m.-3 p.m. |

From January 31 to the end of the term, the University Store will be open Monday-Friday, 9-5, Saturday, 11-3 (Saturday schedule may vary).

From January 31, February 4, the Textbook Annex will be open Monday-Friday, 9-5, no Saturday hours. From February 7 to the end of the term, the Annex will be open Monday-Friday, 9-4.

### Holyoke

Textbooks are available at the HCC Bookstore. In addition, students have complete access to the college library upon presentation of a current University of Massachusetts Continuing Education Identification Card.

**REGISTER EARLY  
REGISTER BY MAIL**



## STUDENT SERVICES

### Orientation for CE Students

Wednesday, January 19, 1977 (the Wed. before classes begin)

7:30 p.m., Hills House Lobby

Student orientation is your opportunity to meet many of the people from Continuing Education—both staff members and fellow students. Orientation is also a chance to find out about the Division's programs, policies, and options for study, as well as the resources of the rest of the university, such as tutoring, the library, etc. A slide presentation will be shown at 7:30 p.m., and refreshments will be served.

### Counseling Services

The counseling staff of Student Services is available to aid students in planning their educational and/or vocational goals. A counselor will be available in Amherst Monday-Thursday, 9 a.m.-7 p.m.; Friday, 9 a.m.-5 p.m.; and on Saturday by appointment.

#### General Counseling Staff

Joan P. Eignor  
Director of Student Services  
100A Hills House North  
(413) 545-3430

Harry Neunder  
103 Hills House North  
(413) 545-3430

Garrett J. McAuliffe  
101 Hills House North  
(413) 545-3430

#### Receptionist

Carolyn Canty  
100 Hills House North  
(413) 545-3430

Although an appointment is not necessary, it will help us if we know you are planning to come.

### Off-Campus Counseling

Continuing Education students and others who may be interested in receiving academic counseling off campus may meet with Harry Neunder of the Student Services staff at Holyoke Community College, 2-7 p.m. on Monday, February 28; Tuesday, March 29; and Wednesday, April 27. Call 545-3430 for appointments and for the specific room location at Holyoke Community College.

### Financial Assistance

#### University Financial Aid—Spring 1977

Continuing Education students carrying six credits or more

and working on a degree or certificate are eligible to be considered for financial aid. Assistance will be awarded on the basis of need and merit and will cover only direct educational expenses. Eligible students may receive aid in the form of National Direct Student Loans, and/or Basic Educational Grants (B.E.O.G.).

Students who wish to apply should:

1. Pick up a Financial Aid packet for Continuing Education Students from the Division of Continuing Education, Hills House North, Room 100.
2. Complete the Basic Educational Opportunity Grant form and submit it to the designated address for evaluation. **All students who have not completed a first bachelor's degree must submit this form.** The BEOG form takes four to six weeks to process, so plan accordingly.
3. **Completed applications**, with B.E.O.G. eligibility report attached (when applicable), and a copy of your 1975 1040 Income Tax Form should be returned to the Continuing Education Records Office in the lobby of Hills House North no later than January 21, 1977. A \$4 processing fee for computing the financial statement will be charged of all applicants. This fee is non-refundable and is payable to Continuing Education, XE-121, at the time of application.
4. **To avoid delays in processing, have you...**
  - a. computed your budget on a 4-month basis?
  - b. checked your arithmetic?
  - c. completed the entire form?
  - d. paid your \$4 processing fee?
  - e. included your B.E.O.G. eligibility index?
  - f. included your 1040 Income Tax Form from 1975?

Awards will be made by the fourth week of the semester, but there is a six to eight week waiting period for receipt of processed checks. It is the student's responsibility to make arrangements for maintenance costs in the interim. Please plan accordingly.

• • • • •  
• A representative from the UMass Financial Aid  
• Office will be in Hills House Lobby at the following time  
• to answer any questions about receiving financial aid.  
•  
• January 11, 10 a.m.-4 p.m.  
• • • • •





### Law Enforcement Education Program (LEEP)

In-service police officers, courts officers, and corrections officers may qualify for grants under the provisions of LEEP. Application forms, which must be submitted each semester, are available from Harry Neunder, 103 Hills House North, or from any member of the Student Services staff, (413) 545-3430. Completed forms must be returned to Mr. Neunder no later than Tuesday, February 8, 1977.

### Veterans Benefits

Courses offered for credit through the Division of Continuing Education are approved by the Veterans Administration, and veterans can therefore apply for educational benefits. There are, however, stipulations on benefits for independent study courses and courses not leading to a standard college degree. Students should contact the Veterans Affairs Office for more details. Continuing Education veterans may obtain the necessary forms and instructions for completing them by meeting with a student advisor from the Veterans Affairs Office on Tuesday and Thursday evenings, 5 p.m.-7 p.m.,

Room 100, Hills North. There is no deadline to file for benefits but the veteran should bear in mind that the processing of forms requires approximately eight weeks.

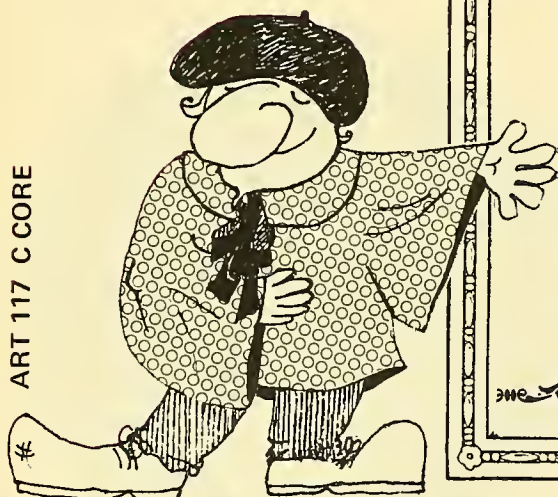
The Veterans Affairs Office offers many other programs and services which are available to Continuing Education veterans/students. For more information, please contact the office at 236 Whitmore Building, (413) 545-1346.

## IMPORTANT COURSE DESCRIPTION INFORMATION

The course descriptions which follow are those which appear in the University of Massachusetts course directory, or which have been approved by the academic departments for inclusion in this catalog. For more complete course information, students may visit either a Continuing Education academic counselor or the staff of the Evening College, both located in Hills House North.

It sometimes becomes necessary for the Division to cancel, add or combine sections of courses listed in this publication, or to change instructors.

ART 117 C CORE



*Art 117 is a basic introduction to art works and to the discipline of art history. It is organized topically rather than historically. The course is intended for individuals who have had no formal experience with the history or art, and who wish to broaden their experience of the visual arts.*

*Introduction to the Visual Arts deals with many aspects of a work of art, from rudiments of stylistic and formal analysis, to the examination of the progression of style through history; patronage, cross-influences, training and evaluation of the artist; criticism of the economics of art, iconography, and the connoisseur. The works of art to be examined will be drawn from both Western and non-Western traditions.*

*This course is offered with the cooperation of the Art Department on Monday evenings for three credits.*

# 12 Introduction to the Visual Arts

## EVENING COLLEGE COURSES

### ACCOUNTING

#### Introduction to Financial Accounting ACCTG 120

Introduction to principles underlying the preparation of financial statements.

#### Introduction to Managerial Accounting ACCTG 130

Continuation of Accounting 120 with major emphasis on the development and application of accounting data for planning and control.

#### Business Applications of Computers ACCTG 210

Basic business data processing methods with emphasis on general business problems and their application to the COBOL language. Prerequisites: Acctg 120, 130 and Acctg 110.

### AFRO-AMERICAN STUDIES

#### Survey of African Art (C) (Holyoke) AFROAM 111

The literature on African art and an analysis of both the theoretical basis for its study and of the distinguishing characteristics of its major traditions. An historical survey of Black art from prehistoric times (5000 B.C.) to the European arrival. The neo-traditional art and the tourist trade.

#### Afro-American Literature and its Cultural Roots (C) AFROAM 151

The relevant forms of Black cultural expression contributing to the shape and character of contemporary Black Culture; the literary application of these in traditional Black writers. In four parts: (1) West African cultural patterns and the Black past; (2) the transition—slavery, the culture of survival; (3) the culture through the literature; and (4) Black perceptions vs. white perceptions.

### ANTHROPOLOGY

#### Introduction to Archaeology (D) ANTH 102

The history, methods and theory of archaeology, with an outline of the main characteristics of the prehistoric record throughout world.

#### Introduction to Cultural Anthropology (D) ANTH 104

Social and cultural anthropology dealing with variations among societies in technology and economics, social and political organization, art, religion, and ideology.

#### Human Evolution ANTH 371

The mechanisms of evolutionary change, the fossil and archaeological evidence bearing on man's evolution, and an evaluation of the various interpretations of the evidence. Prerequisite: Anth 103.

### ART

#### Drawing Composition (C) ART 102

Continuation of Art 100. Emphasis on pictorial composition and advanced drawing techniques. 6 studio hours.

#### Introduction to the Visual Arts (C) ART 117

The diverse media of the visual arts from a topical rather than a strictly historical viewpoint. The fundamental techniques of formal and stylistic analysis; surveys a wide range of topics in the context of the relation of art objects to their cultures, creators, critics and public.

#### Design I ART 210

Introduction to graphics, interior layouts, normative and descriptive elevations, 2- and 3-point perspective drawing, architectural measurement and theory of proportion. Lab Fee: \$3.

#### Design II ART 211

Advanced elevations, layouts and perspectives; freehand perspective, theory of color, light. Prerequisite: Art 210. Lab Fee: \$3.

#### History of Decorative Arts ART 215

A history of the development of the decorative arts with emphasis on the decorative arts of the European tradition from the Renaissance to modern times. Historical development of styles as reflected in furniture, ceramics, weaving, and the other decorative arts.

#### Painting I (C) ART 220

Course for beginners and those with experience in painting. Includes work with acrylics, a fast drying paint which can be used on a variety of surfaces. Develops skills in the use of color. Emphasizes personal visual expression. Prerequisites: Art 100, 120. 6 studio hours.

#### Arts Management ART 290R

For a detailed description of Art 290R, please see page 39.

#### American Art (C) (Section 1, Amherst; Section 2, Holyoke) ART 295

The earliest colonial art, the impact of later European influences, regional art of the 19th and 20th centuries, and contemporary developments.

### ASTRONOMY

#### Exploring the Universe (E) (Holyoke) ASTRON 100

Not open to Physical Science or Engineering majors. The earth, its structure and age, the moon, the sun, other planets and the origin of the solar system. Stars and galaxies, their birth and death. The universe, its structure and evolution. Supplemented by occasional hours of evening observation.

#### The Solar System (E) ASTRON 101

Earth, moon, tides, laws of motion, planets and satellites, the sun. Origin of the solar system and current theories of the origin of life.

### BACHELOR OF GENERAL STUDIES

#### Women and the Life-Career Process (Back To School—Into The Job Market) BGS 100B

Life planning and career development, with occupational, not political base, specifically for women entering or returning to higher education and/or world of paid work. Women's self-development, changing social positions, roles in work both inside and outside the home, and needs for continuing education. Professionally planned personal development process.



## Occupational Safety and Health Management BGS 201

Recognition, evaluation and elimination of Occupational Safety and Health hazards through the application of program management. Recent Occupational Safety and Health legislation (OSHA) with focus on the potential hazards in the occupational environment, the effects of excessive exposure and basic types of hazard control mechanisms.

## Contemporary Practices in Corrections BGS 220A

Based on various innovative rehabilitative efforts for offenders at the state, local, and national levels. Course covers, but is not limited to, investigation of the implications of work release, education release, and human development programs within institutions, and the recently instituted enlightened offender sentencing procedures. Students explore the effects of these programs on police and courts practices and policies. Covers program case studies, augmented by presentations from participants in new programs currently in operation. Designed primarily for those working toward the BGS in Criminal Justice. Others are welcome.

## A Criminal Justice Study in Victimization BGS 221A

Crime affects the lives of countless thousands of victims every year. The presence of these victims has important implications for the criminal justice, social service and health agencies that provide care for crime victims and their families. Course is designed to identify crimes and their victims, to explore myths about victims, to develop insight into the meaning of victimization, to identify local and national resources available for victims, and to study legislation concerning crime victims. Special attention is given to victims of sensitive crimes like rape and child abuse. Provides a shift in emphasis from studies that focus on the offender. Designed primarily for those working toward the BGS in Criminal Justice. Others are welcome.

## BOTANY

### General Botany BOTANY 101 (E)

An introduction to basic biological principles of organization, development and evolution, using botanical illustrations. The foundations and approach in biological research, and the consequence of this research on human thought and experience. Not open to science majors without permission of major departments. Not to be taken serially with Botany 100. Lab Fee: \$2.

## SITUATION:

The Bolshoi Ballet and Dave Brubeck have just offered to do a joint performance in your community if you will make the necessary arrangements.

## QUESTION:

What do you say?

## ANSWER:

HELP!

If you need assistance with technical or management problems in your arts organization, or would like to discuss the possibilities of bringing the arts into your community, call us. We're here to help when you need us.

Coordinator of Consulting  
Arts Extension Service (413) 545-2013



## COMMUNICATION STUDIES

### MASS COMMUNICATIONS

#### Introduction to Mass Communications (D) COMSTU 121

Includes history and development, structure, roles, and functions. Standards for evaluation of the mass media.

#### Small Group Communication COMSTU 202

The theory and process of small group communication. Practical application to group discussion; leadership; and problem-solving.

#### Persuasion Theory (Holyoke) COMSTU 204

How attitudes are formed and changed through speech communication. An appropriate ethic of persuasion in today's society.

#### History and Development of the Motion Picture COMSTU 225

Evolution of the motion picture as an international art form and social force. Analysis of form, technique and impact of film. Selected screening of representative film styles and content. Lab Fee: \$10.

## COMPUTER AND INFORMATION SCIENCE

#### Introduction to Problem Solving Using the Computer (E) COINS 122

Problem-solving and FORTRAN programming for students from all disciplines. Concepts associated with problem-solving valid for many types of problems. Use of FORTRAN on the UMass time-sharing system. Laboratory included. Credit: 4. Lab Fee: \$10. Course Fee: \$140.

#### Assembly Language Programming COINS 201

Basic ideas of computer hardware and principles of computer systems organization, logical design, elementary data structures, and assembly language programming. Lab involves hands-on experience with programs, loaders, and assemblers. Prerequisite: Coins 122 or programming experience. Credit: 4. Lab Fee: \$10. Course Fee: \$140.

## ECONOMICS

#### Introduction to Microeconomics (D) ECON 103

Introductory analysis of resource allocation and income distribution through microeconomic theory. Specific problems illustrate use of the theoretical precepts developed.

#### Introduction to Macroeconomics (D) ECON 104

An introduction to the economic theory used to explain the behavior of the American economy. Emphasis on the macroeconomic goals of full employment, price stability, economic growth and balance of payments equilibrium.

#### Money and Banking (D) ECON 211

The development and operation of the monetary and banking systems of the United States; problems of achieving full employment and price stability through monetary controls. Prerequisite: Econ 104.

#### Regional Economics (D) (Holyoke) ECON 281

The process of regional economic growth; location theory and basic techniques of regional analysis; public and private area development programs. Prerequisite: Econ 103 recommended.



## State and Local Public Finance (D) (Holyoke) ECON 314

State and local government revenue and expenditure programs. Individual research projects relating to Massachusetts or surrounding states required. Prerequisite: Econ 100 or 103.

## EDUCATION

### Photography I EDUC 290A

Intense workshop experience in photography. Lecture and lab (dark-room) scheduled for each class meeting. History of photography. Criticism of photography and visual literacy. Students complete all reading assignments and produce a portfolio to complete the course. Additional lab times scheduled outside of the regular class time.

### How to Survive as a Teacher in Your School and System EDUC 290N

A practical introduction to school organizations, and the teacher's place in them. Includes: conflicting roles for the teacher; trouble-shooting; getting along—strategies and theories.

### Management and Change EDUC 590M

Characteristics of the systematic approach to educational change; alternative approaches toward educational change; resistance to change; diagnosing positive and resistive forces associated with change; application to a specific change effort in which the participants are involved.

## DESIGN EFFECTIVE LEARNING CLUSTER

### Aesthetic Elements in the Teaching Learning Process EDUC D 205

Enables teachers to increase their creativity and use of the arts in the classroom through improvisation workshops, discussions, readings and curriculum projects.

### Principles and Methods of Teaching Elementary Science EDUC D 262

An introduction to basic science teaching methods and curricula as related to the development of scientific thinking in children. Topics include: development of causal thinking in children (and general cognitive development); survey of innovative approaches in science teaching; introduction to major laws and principles in physics, chem-

istry, biology, and geology; approaches to teaching integrated science; integration of science with other aspects of the curriculum.

### Models of Early Childhood Education EDUC D 290N/D 590N

An introduction to early childhood education through eight rather distinct models which were a part of a national demonstration experiment carried out by the Office of Child Development entitled "Planned Variation." Students analyze each model on the basis of its theoretical underpinnings, and explore the extent to which its curriculum expresses that basic. Implications for daycare, preschool, and lower elementary education.

## HUMAN APPLICATIONS CLUSTER

### Human Relations in the Classroom EDUC H 220/H 520

For teachers, counselors, group leaders, educators, focuses on five specific skill-building areas in Humanistic/Psychological Education: the Teacher as Consultant; the Teacher as Counselor; the Teacher as Group Facilitator; the Teacher as Curriculum Designer; and the Teacher as Change Agent in the Schools. Theoretical orientation is Gestalt-existential with an emphasis on systems approaches to learning and change. Applications of developmental theory is also stressed.

### Family Counseling EDUC H747

Basic approaches to family counseling including communications, psychoanalytical and behavioral theories.

## EDUCATIONAL POLICY STUDIES CLUSTER

### Foundations of Education EDUC P 251

A study of selected problems and issues in modern education, such as educational aims, societal expectations of the schools, church-state relations, professionalism, academic freedom, curriculum and methodological emphasis, and urban educational innovation. Examines alternatives of attitude and action in critical situations in education. Considers resources available from philosophy, psychology, sociology, and history of education. Objective is to formulate realistic personal and professional goals for teaching.

### Curriculum Models in Early Childhood Education EDUC P 390D/P 690D

The purposes, structure and methods of five current early childhood education models are examined. Includes beliefs assumed by each model about the nature of child development and learning, the importance of education, and the nature and purpose of child care and early education.

Music 253 traces the history of jazz theory and performance from the African roots through contemporary practices. Emphasis is placed on those artists who have initiated or consummated significant developments. Most class time is devoted to listening and analysis/discussion, with evaluation based primarily on the extent of participation in discussion. The History of Jazz is offered in cooperation with the History Department on Monday evenings for three credits.

history of  
JAZZ

**Child/Environment Interaction: The Design of Physical Space and Materials for Young Children EDUC P 790D**

Develops a means of thinking about space and objects in order to: understand their influences; improve their educational value; make them more inviting; help the child cope with space-object problems; as well as generally to gain fuller and more effective use of these dimensions to meet the individual needs of children. Lab Fee: \$3.

**TRANSDISCIPLINARY CLUSTER**

**Improvisational Drama in Educational and Therapeutic Environments EDUC T 290S**

Creative drama and movement for use in therapeutic and educational environments. Emphasizes drama as a means of communication, self-expression and problem-solving. Uses theater games, mime, movement and story enactments to expand intuitive and imaginative capacities in order to develop those capacities in others.

**Diagnosis of Reading Disabilities EDUC T 575**

A study of current standard reading tests, special diagnostic screens for physical difficulties (vision, hearing, speech) and informal assessments of language abilities. A research review defining diagnostic differences between the reluctant readers and readers with severe learning problems. Each student in the class will work outside of class in a Diagnostic Module for Classroom Teachers which includes reading skills and strategies as well as techniques for writing criterion test items in the classroom. Prerequisite: one completed year as a classroom teacher.

**ENGLISH**

**Nature and Literature (C) ENGL 161**

Literature that deals with man's relationship to his environment. Topics may include changing conceptions of nature, changing attitudes toward nature. Readings may include works by Conrad, Darwin, Thoreau, Shakespeare, Frost, Homer, Faulkner.

**The Modern Novel: 1930-1960 (C) ENGL 262**

Analysis of some twelve novels. A continuation of Engl 261, but may be elected independently.

**American Folklore (C) (Holyoke) ENGL 281**

Oral traditions in America, with emphasis on surviving British lore, American Indian lore, Negro lore, and recent folk materials.

**Literature and Psychological Criticism (C) ENGL 284**

An examination and application of theories and techniques of psychological criticism to selected works of literature. The theoretical focus is psychoanalytic (Freudian); other theories (Jungian, phenomenological, existential) used as time permits.

**Creative Writing ENGL 341**

Intensive practice in writing prose fiction, poetry, and occasionally other forms, supplemented by discussion of ideas and techniques in contemporary literature. Lab Fee: \$5.

**ENTOMOLOGY**

**Insects and Man (E) (Holyoke) ENT 126**

Survey of the field: structure, development, evolution, classification, biology, and natural control of insects. Formation of an insect collection.

**Practical Beekeeping ENT 266**

Honeybees and their relatives, structure and biology of bees, methods of management, diseases, pollination, queen rearing, honey production, and history of beekeeping. Prerequisite: Ent 126 or permission of instructor. Lab Fee: \$2.

**FOOD & AGRICULTURAL ENGINEERING**

**Housing Design and Construction FDAGEN261**

Space arrangement, construction materials, construction problems and discussion, utilities, financing, maintenance and remodeling. Emphasis on planning and evaluation procedures and factors. Lab Fee: \$8.

**FOOD & RESOURCE ECONOMICS**

**World Food and Natural Resources (D) F&R EC 110**

Introduction to the natural, economic, and sociopolitical forces influencing world food and biological resource development. Potentials for meeting pressures on resources.

**FRENCH**

**Elementary French FRENCH 120**

For those with no previous creditable training in French. Intensive practice in the four language skills.

**GENERAL BUSINESS & FINANCE**

**Corporation Finance GB FIN 201**

Corporate financial behavior; appraisal of factors affecting decision-making regarding sources and application of funds; introduction to capital budgeting and cost of capital problem. Prerequisite: Acctg 125 or permission of instructor.





## **Principles of Insurance** **GB FIN 230**

Risks encountered by individuals and business firms and methods and institutions which have been established to insure against financial losses. Various forms of insurance are studied primarily from the buyers' point of view.

## **Introduction to Law** **GB FIN 260**

The nature, functions and limits of law. Various theoretical approaches to law as an important institution in society. Selected problems of law, power and stratification and the relationship of law and values in society. Analysis of the administration of law through legislation, administrative agencies and courts.

## **GEOLOGY & GEOGRAPHY**

### **History of Life (E)** **GEOL 107**

The adaptations of selected lineages of animals to the changing environments of the geologic past. Emphasis on those groups which best illustrate evolutionary principles or unsolved problems. Not open to those who have taken Geol 240. Lab Fee: \$4.50.

## **GERMAN**

### **Elementary German** **GERMAN 110**

For the non-German major who has no previous training in German. Emphasis on understanding and reading. Sequence to be followed: German 110, 120, 130, 140.

## **HISTORY**

### **European History, 1815 to the Present, with Films (C)** **HIST 141**

The historical development of Western European thought and institutions. History majors are strongly urged to take this course before registering for advanced European courses.

### **New Approaches to American History (C)** **HIST 186**

Learning history by doing. Analysis of Lizzie Borden murder case.

### **History of American Westward Expansion, 1763-1893 (C)** **(Holyoke) HIST 333**

Advance of settlement from the Appalachians to the Pacific and the influence of the frontier upon social, economic, and political conditions.

### **United States Since Pearl Harbor (C)** **HIST 339**

Emphasis on political, economic, and social currents since World War II.

## **HOTEL RESTAURANT & TRAVEL ADMINISTRATION**

### **Food Service Management** **HRTA 211**

Practices used by the food service industry pertaining to purchasing, receiving, and issuing food, beverages, and other supplies. Principles of food and beverage cost control.

## **INDUSTRIAL ENGINEERING & OPERATIONS RESEARCH**

### **Safety Engineering** **IE 360**

Design of equipment facilities and processes to minimize accidents. Evaluation and design of fire prevention equipment and accident control procedures in organizations.

## **ITALIAN**

### **Elementary Italian** **ITAL 110**

For students with no previous creditable training in Italian. Intensive practice in language skills.

## **LEGAL STUDIES**

### **Introductory Legal Studies** **LEGAL 201**

Exploration of the purpose and functions of law and society: legal reasoning and decision-making; the impact of law; the relationship between power and law, and morality and law, problems of achieving justice in contemporary society. Sociology and problems of the legal professions. Legal phenomena in other than formal law settings. Lab Fee: \$4.



IE 360

# Safety Engineering

Safety Engineering acquaints the student with several aspects of safety in industry: historical background, present regulations, the literature of safety, product safety, safety and design, public interest groups, and the use of measuring devices (sound pressure meters, light meters, devices for taking temperature, pressure, and air samples).

Student groups will be assigned current readings, chosen to coordinate with individual interests. The course will be organized around the levels of the students who participate.

Students will learn how to do a literature search on the computer—no prior familiarity with the computer is required.

This course is offered in cooperation with the Department of Industrial Engineering and Operations Research on Thursday evenings for three credits.

The graphic features a large rainbow arching over the text, and a circular inset at the bottom showing a complex mechanical assembly with various gears and components.



## Intermediate Legal Studies

### LEGAL 202

Relationship of the individual to the state and society. Legal safeguards of personal dignity and autonomy and the limits on personal freedom when it conflicts with social values. Legality and ethics of group action to alter the relationship of the individual to the state. Lab Fee: \$4.

## LINGUISTICS

### Introduction to Psycholinguistics (C)

#### LING 211

Its theoretical foundations, methodology, and experimental techniques. Emphasis on the acquisition of language, child language and linguistic universals, and learning and perceptual strategies. Prerequisite: Ling 201.

## MANAGEMENT

### Principles of Management

#### MGT 201

Introduction to the fundamentals of the management of organizations. Survey includes behavioral background of formal organizational life, organizational design, integrating factors in collective behavior, organizational change, systems analysis, techniques of decision-making and control, the organization and its environment, and the nature of management theory.

## Personnel Management

### MGT 214

Principles and policies followed by management in recruitment, development, direction, and control of personnel.

### Managerial Behavior (Holyoke)

#### MGT 230

Principles of human behavior in organizations; understanding of one's self as a person and as a manager; development of interpersonal managerial skills. Prerequisite: Mgt 201.

### Administrative Theory (Holyoke)

#### MGT 231

Principles of administration, modern organization theories, specialization, functionalization, coordination, planning and control, authority status, leadership, decision-making, communication, and power-structuring. Prerequisites: Mgt 201, 230.

### Business and its Environment

#### MGT 265

A critical examination of the social, political, technological, and ethical issues confronting the contemporary manager and the modern corporation. Competing concepts of the role of business in society. Prerequisite: junior standing or permission of instructor. (Also listed as Gen Bus 265.)

### Women In Business

#### MGT 390E

A review of women's issues as they relate to business. Includes women in the workforce, sex differences, socialization, institutional barriers, the professions, women in management, women and the law, assertiveness, and affirmative action. Emphasis on active participation of class members.

## MARKETING

### Fundamentals of Marketing

#### MKTG 201

The role of marketing in our economic and social structure. The planning, distribution, pricing and promotion of goods and services to consumer and industrial markets viewed as internal activities of the firm, and as shaped by environmental forces.

### Marketing Communications (Holyoke)

#### MKTG 222

Development of effective marketing communication strategies based upon an understanding of the characteristics of audiences. Conceptual material from communications theory applied to advertising and other promotional problems. Prerequisite: Mktg 201 or permission of instructor.

## MATHEMATICS

### Topics in Contemporary Math (E)

#### MATH 110

A survey of several specific topics designed to acquaint the student with the general nature of mathematics. Topics may include logic and sets, mathematical systems, calculus, probability, statistics, linear programming, and game theory.

### Mathematics for Business II (E)

#### MATH 121

Integration, functions of several variables, and applications to business. Credit given for only one of the courses 117, 119, 121, 132, 136, 138. Prerequisites: Math 116, 120, or equivalent.

### Calculus for the Life and Social Sciences II (E)

#### MATH 128

Continuation of Math 127. Credit given for only one of the courses 117, 119, 128, 132. Prerequisites: trigonometry and Math 127.

## HIST 186 C CORE

# LIZZIE!

*Lizzie Borden took an axe,  
And gave her mother forty whacks.  
When she saw what she had done,  
She gave her father forty-one!*

On the hottest day of the summer of 1892, Lizzie Borden of Fall River, Massachusetts, hacked her father and mother to death with an axe. This brutal incident is the focus of an entire semester's work.

What drove Miss Lizzie to do it? The search for the answer leads deeper and deeper into the inner life of the Borden family, into the history of Fall River, and ultimately into the most basic questions of class structure and sexual politics in the Gilded Age. History 186, *New Approaches: Lizzie Borden*, gives students the opportunity to pose and answer questions through careful and intensive reading in a wide variety of primary sources.



History 186 is offered in cooperation with the History Department of the University of Massachusetts/Amherst for three credits on Thursday evenings.

## MUSIC

### History of Jazz

#### MUSIC 253

A history of jazz theory and performance from the African roots through contemporary practices. Emphasis on those artists who have initiated or consummated significant developments. Music performance ability and/or prior experience in the jazz idiom not required. Develops some vocal/instrumental jazz improvisation techniques.

### Electronic Music

#### MUSIC 385B

An introduction to electronic music—the whys, hows, and means to understanding and creating art in this medium. No previous knowledge in electronics or music required. Specific instruction on the Moog 15, and Synthi music synthesizers. Basic recording and studio techniques. Students compose music.

## NURSING

### Pathophysiology\*

#### NURSE 200B

Builds upon student's basic understanding of physiology. Introduces concepts of pathophysiology. Focuses on the ways in which the various pathological processes, such as obstruction and trauma, affect the human organism. Includes the effect and response at the cellular, tissue, organ, organ system and whole body levels. Emphasis on the formation of concepts of pathology rather than the particulars of system dysfunction or individual disease entities.

### The Nursing Process\*

#### NURSE 250

Provides an orientation to the Nursing Process as a concept which has evolved historically and as a method which subserves the Professional Practice of Nursing in all settings. An Associate Degree or Diploma Program does not have this content and this course is designed to provide the training needed for baccalaureate nursing practice. Clinical practice by arrangement. Credit: 6. Course Fee: \$210.

### Oncology Nursing (Springfield)

#### NURSE 290A

Explores pathophysiologic and psychosocial needs of both the child and adult with cancer—from prevention to care of the dying. Emphasizes the role of the nurse in providing physical, emotional and social support for cancer patients and their families.

### Currents in Nursing\* (Springfield)

#### NURSE 310

Events that shape the nursing profession are explored in light of 1) the historical development of the profession against the backdrop of society, 2) the accomplishments of the profession recognizing its problems and process, and 3) the responsibilities and commit-

ments of the members of the group for the future.

*\*Required for the bachelor's degree in Nursing at the University of Massachusetts/Amherst, but applicable to the degree only when the student is formally admitted to the Nursing Program.*

## PHILOSOPHY

### Introduction to Philosophy (C)

#### PHIL 105

Some of the most important general questions, ideas, theories, and methods of inquiry which have given direction to Western thought.

### Introduction to Logic (E)

#### PHIL 125

The nature of critical thinking, including the functions of language, the structure of deductive arguments, and a glimpse at inductive methods

### American Philosophy (C) (Holyoke)

#### PHIL 218

Examination by means of a study of selected original texts by the outstanding American philosophers, of their contribution to Western thought and American civilization.

### Philosophical Approaches to Science (E)

#### PHIL 240

An introduction to the results of philosophical analysis of scientific practice, and the bearing of these results on a general description of scientific methodology.

## PHYSICS

### Introduction to Physics: The World Beyond Our Senses (E)

#### PHYSIC 100

The universe in terms of its basic building blocks—atoms, nuclei, and "elementary particles." New views of nature derived from our ability to see and measure the world of the very small.

## PLANT & SOIL SCIENCES

### Plant Propagation

#### PLSOIL 110

The science of plant reproduction. Lab fee: \$10.

### The Plant Environment and Crop Production (E)

#### PLSOIL 115

Important environmental factors affecting plant growth and development, the interrelationships which exist between these factors and plants, and the effects resulting from environmental modification attributable to man's activities.

# The New England Artist Festival and Showcase II

## May 7&8, Northampton 3-County Fairground

presented by

The Arts Extension Service, Division of Continuing Education, UMass Amherst

*It's one of New England's largest gatherings of artists, performers, craftspeople, poets, small presses, filmmakers and other creative people. For information, call the Arts Extension Service at (413) 545-2013.*





## Organic Farming and Gardening (E)

### PLSOIL 120

Basic principles of plant nutrition and culture, soil fertility and management by organic methods, biological and natural control of insect pests, weeds and plant diseases, variety selection, and alternative chemical methods. Lab Fee: \$7.50.

## POLITICAL SCIENCE

### The Law and Practice of Civil Liberties (D) (Section 1, Amherst; Section 2, Holyoke) POLSCI 261

Development in American Constitutional law of the concept of civil liberty, including free speech and religion, fair trial, and race discrimination.

### Public Personnel Administration (Section 1, Amherst; Section 2, Holyoke) POLSCI 323

The personnel function in bureaucracy; patronage and merit; career service and political executive; authority and informal organization; employee rights and collective action.

## PSYCHOLOGY

### Elementary Psychology (D) PSYCH 101

An introduction to the basic approaches and concepts of modern psychology. Examples from the areas of perception, conditioning, cognitive processes, social behavior, tests and measurements, and personality.

### Psychology as a Natural Science PSYCH 120

An introduction to the natural science side of psychology. Includes learning, cognitive, neural bases of behavior, sensation, perception. Discusses broader issues of the science of psychology and introduces concepts of statistics.

### Statistics in Psychology PSYCH 145

Introduction to statistical principles and techniques as applied to psychological data.

### Motivation (D) PSYCH 230

Introduction to theories and research on the nature and determinants of motivation. Topics include instinct, behavior energization concepts, biological and acquired bases of emotions and motives, frustration, conflict and stress. Prerequisite: Psych 101.

## Drugs and Behavior (Holyoke)

### PSYCH 252

The psychobiological foundations of drug-behavior interactions. The neural and neurochemical basis of behavior, basic pharmacology, drugs that affect mood and their mode of action, the psychological and physical bases of drug dependence and addiction, experimental approaches to psychopharmacology. Prerequisites: Psych 101 and Zool 101.

### Psychology of Adolescence (D) PSYCH 263

The development and emotional, social and intellectual adjustment of the individual during adolescence. Prerequisite: Psych 101.

### Personality (D) PSYCH 270

Introduction to the scientific study of personality. Personality development, structure and dynamics from major theoretical orientations. Prerequisite: Psych 101.

### Educational Psychology (D) PSYCH 301

Psychological facts and principles of development, learning, and measurement as applied to educational situations. Prerequisite: Psych 101.

### Abnormal Psychology (D) PSYCH 325

Etiology, symptoms and therapy of behavior abnormalities including neuroses, psychoses, epilepsies, speech disorders, and mental deficiency. Prerequisite: Psych 101.

## RHETORIC

### Elements of Writing (B) RHET 100G

Basic language behavior course: writing, editing and rewriting to attain clarity in the use of words, syntax and organization. Subject matter is interdisciplinary. Note: This is *not* a remedial writing course. It will begin at a more elementary level than other Group One courses, but will develop in rapid sequence to accomplish the same goals as other Rhetoric 100 courses.

### Language and Speaking (B) RHET 110A

Interpersonal and public communication: selection, arrangement and development of ideas and materials for oral communication; the use of language for conveying meaning, thinking, reasoning, problem-solving and decision-making; analysis of audience attitudes

## AFROAM 151 C CORE

This four-part course covers West African cultural patterns, slavery, literature, and black vs. white perceptions. It includes the relevant forms of Black Cultural expression contributing to the shape and character of contemporary Black Culture; and the literary application of these in traditional Black writers. It is offered with the cooperation of the Afro-American Studies Department on Tuesday evenings for three credits. For additional information, see the course description on page 13.

## INTRODUCTION TO AFRO-AMERICAN CULTURE AND LITERATURE



and beliefs; identification of purpose and assessment of effects of communication; ethical considerations in influencing others; and evaluation of one's own and others' public messages.

## **SOCIOLOGY**

### **Social Problems (D) SOCIOL 103**

Changes arising from culture contact, social reform, and technical innovations. Planned and unplanned change, particularly with respect to underdeveloped countries.

### **Drugs and Society (D) SOCIOL 276**

The sociological implications of drug usage, including alcohol as well as "mind altering" drugs. Effects of drugs, prevalence of usage, social correlates, anthropological and historical perspectives, problems and management of addiction, social control of use and abuse, social implications of drugs, especially with respect to the counter-culture movement.

### **Issues in Social Policy Planning (D) SOCIOL 293**

Primarily for upper division students. Focuses upon 1) systematic policy planning, the role of research and development and the role of the scientific community in domestic policy programming; and 2) selected substantive issues which draw heavily from social and geographical distributions of relative access to the valued goods, services and rewards in the society and consideration of mobility processes on the redistribution of such access.

## **SPANISH**

### **Elementary Spanish SPAN 110, 120**

For students with no previous creditable training in Spanish. Intensive practice in language skills. To fulfill the language requirement, upon completion of the course most students are required to continue by taking Spanish 130, 140.

## **WOMEN'S STUDIES**

### **Women in Western Civilization WOST 190A**

Examines the role and place of woman from Greek and Roman times to the present: woman in ancient society; woman in the Middle Ages; the chivalric code; the attitude of the Church towards women; the effect of the Renaissance and the Reformation on the position of women; the influence on women of capitalization, industrialization and liberalism; the struggle for women's rights, and the realities of women in present-day Europe.

### **Sociology of Women WOST 290G**

A critical examination of mainstream sociology and the place and role it has assigned to women in American society. "Women are in part the way they are because of the way they are thought to be." Sociological theory and method have significantly contributed to the social construction of everyday reality, the social attitudes and beliefs about "women's place," and therefore to the way women are treated within any social situation.

## **ZOOLOGY**

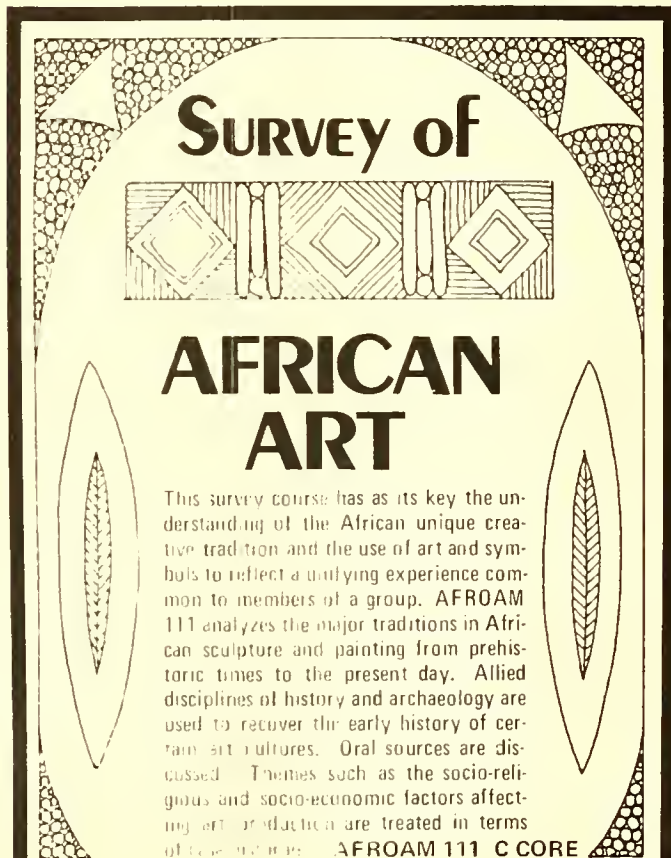
### **Introductory Zoology (E) ZOO 101**

Principles of zoology including cell structure and metabolism, heredity, development, behavior, evolution, ecology, and the anatomy and physiology of the major groups in the animal kingdom. Background for understanding current biological problems. Lab Fee - \$10

# STAY WITH IT!

## Keep your education going with Credit-Free Workshops

### Credit-Free Workshop information begins on page 37.



## SURVEY of

# AFRICAN ART

This survey course has as its key the understanding of the African unique creative tradition and the use of art and symbols to reflect a unifying experience common to members of a group. AFROAM 111 analyzes the major traditions in African sculpture and painting from prehistoric times to the present day. Allied disciplines of history and archaeology are used to recover the early history of certain art cultures. Oral sources are discussed. Themes such as the socio-religious and socio-economic factors affecting art production are treated in terms of the traditions. AFROAM 111 C CORE

# BACHELOR OF GENERAL STUDIES

## The BGS Degree

The Bachelor of General Studies (BGS) is a University of Massachusetts degree available to part-time, non-traditional students through the Division of Continuing Education. The BGS is designed to be flexible and responsive to special needs that cannot be met in regular UMass programs. It requires considerable initiative and self-knowledge on the part of the student, and offers someone with firmly established goals a chance to take an active part in planning his or her program. The BGS degree has been used advantageously by three different groups of Continuing Education students: 1) those who would like to orient their degree more specifically toward a career area, as in the cases of recent graduates who have majored in Health Care Administration and Electronic Instrumentation; 2) those who are already established in a career but would like the benefits of a generalist, liberal arts degree, such as Human Relations or Liberal Studies; (3) those who are looking for a specific match of disciplines, for example, Philosophy of Art or American Literature and Library Studies.

The Continuing Education counseling staff and faculty advisors chosen by the student can aid in the design of the BGS area of concentration, which is usually 30 credits of junior-senior level college or university work, at least 15 of which must be UMass credits. This designed degree, expressed as a list of courses and a thorough written argument on the BGS Proposal Form, will be judged both by the faculty advisor and the BGS Program Committee of Continuing Education. Students with appropriate Associate's degrees may enroll in already-designed degrees in Criminal Justice or Fire Science, described below.

A maximum of 75 semester credits from accredited colleges and/or universities may be used in the required 120 credits needed for graduation. Other credits included in the transfer total may be those earned through the College Level Examination Program (CLEP) tests, or credits for certain types of training in the U.S. military service. BGS students should matriculate as soon as they are eligible. Graduates must maintain a grade-point average of at least 2.0 on a 4.0 scale and fulfill the University core requirements. See **Core Requirements and Matriculation Process**.

The Continuing Education counseling staff recognizes the difficulties inherent in creating and justifying an ambitious course of study. We encourage students, whatever the stage of their planning, to discuss their ideas for a BGS degree with a Continuing Education counselor.

## BGS Criminal Justice

The BGS in Criminal Justice is designed to build upon the Associate's degree in Law Enforcement (or its equivalent in appropriate course work) from the community colleges. People already working in the criminal justice professions, and those considering such careers, should find this degree flexible enough to meet their special needs as part-time students and their particular goals in criminal justice

studies. This cooperative effort between UMass/Amherst and the community colleges is intended to produce highly competent officers for the police, courts, and corrections institutions of the Commonwealth.

### Requirements:

1. The general BGS regulations described above apply, except that students must have earned the A.S. degree in Law Enforcement (or its equivalent), and no BGS Proposal Form is required.
2. Effective for all students who enter the program after summer, 1976, the Criminal Justice Core (not to be confused with the University core requirement which is mentioned above and described in detail elsewhere in this catalog) must be fulfilled. This core is a group of five UMass junior-senior level courses (15 credits minimum) selected from academic disciplines related to criminal justice and distributed as follows:
  - Administration/Human Relations (3 credits)
  - Communications Skills (3 credits)
  - Political Science/Legal Studies (3 credits)
  - Social/Behavioral Sciences (3 credits)
  - One core elective (3 credits) selected with the help of an advisor from the above areas.
3. Effective for all students who enter the program after summer, 1976, the required courses in one of the following career tracks must be completed:

**A. Criminal Justice** This general career track is for students seeking advanced study in psychology, sociology, political science, legal studies and other departments concerned with the social problems of crime and the nature of the criminal justice system. Required are at least 15 credits—UMass junior-senior level.

**B. Administration in Criminal Justice** Students selecting this career track generally intend to qualify eventually for supervisory positions in the criminal justice system. Required are at least 6 credits in management or administration, 3 credits in communications skills, 3 credits in psychology or sociology, and 3 credits of approved electives.

**C. Criminal Justice Education** This track is recommended for students interested in community college teaching positions, police academy teaching, and other criminal justice instruction. In addition to course work in education, sociology, psychology, and other relevant departments, a supervised teaching internship is required. Necessary are at least 15 credits—UMass junior-senior level.

Interested students should contact one of the Student Services counselors at 545-3430 for complete course lists and other information. Junior-senior level courses that may be used to satisfy some of the above program requirements can be found in this catalog under the following department designations and numbers: BGS 201; COINS 201; COMSTU 210; EDUC 290A, 290B, 290D, 390A; GB FIN 260; HIST 337; JS 201, 391D; LEGAL 201, 202, 290D; MGT 201, 214, 230, 231; POLSCI 223, 226, 260; PSYCH 210, 280, 365, 391J; SOCIOL 224, 246, 250, 292.

BGS INFORMATION CONTINUES ON PAGE 27.



DIVISION OF CONTINUING EDUCATION-UNIVERSITY OF MASSACHUSETTS/AMHERST

23



**SEE**

**THE UNIVERSITY OF MASSACHUSETTS  
SUMMER SESSION IS DESIGNED TO:**

- HELP YOU ACCELERATE YOUR PROGRESS
- HELP YOU MAKE UP DEFICIENCIES
- GIVE YOU ELECTIVES NOT AVAILABLE  
OF THE YEAR

**TWO SESSIONS FROM  
MAY 24 THROUGH JULY 6 AND JULY 13-27  
STILL \$25 PER CREDIT, UNDERGRADUATE  
\$40 PER CREDIT, GRADUATE\***

**MAKE IT PART OF YOUR SUMMER  
THINK SUMMER AT THE UNIVERSITY OF  
MASSACHUSETTS/AMHERST**



**SEE**

# **MINNER**

**SACHUSETTS**

**IGNED TO:**

**ROGRESS TOWARD GRADUATION**

**NIES**

**AVAILABLE DURING THE REST**

**OR 1977**

**LY 7 THROUGH AUGUST 18**

**DUATE;\***

\*PLUS WEEKLY SUMMER SERVICE FEE

**YOUR GRADUATION PLANS**

**THE UNIVERSITY OF**

**EST**

# **SENIOR**



The following information must be provided before your application can be processed.

Name  LAST NAME  FIRST NAME  INITIAL   
 Home Address  NUMBER & STREET   
 CITY  STATE  ZIP CODE  Age   
 Home Tel.  Business Phone  Marital Status   
 Area Code  If No Phone, Write "None"

**OPTIONAL:** Your answers to these questions will guide us in planning future workshops. The information will be confidential if you choose to answer.

1. How did you find out about these workshops? \_\_\_\_\_  
 2. What other workshops would you like to have offered? \_\_\_\_\_  
 3. Occupation: \_\_\_\_\_ Full time ☐ Part time ☐  
 4. Are you a student? \_\_\_\_\_ Full time ☐ Part time ☐ Where? \_\_\_\_\_  
 5. Have you taken a CE Workshop before? \_\_\_\_\_

| Workshop No.                                  | Section                  | Day | Time | Title | Fee      |
|-----------------------------------------------|--------------------------|-----|------|-------|----------|
| 1. <input type="text"/>                       | <input type="checkbox"/> |     |      |       | \$ _____ |
| * Alternative Choice No. <input type="text"/> | <input type="checkbox"/> |     |      |       | \$ _____ |
| 2. <input type="text"/>                       | <input type="checkbox"/> |     |      |       | \$ _____ |
| * Alternative Choice No. <input type="text"/> | <input type="checkbox"/> |     |      |       | \$ _____ |
| 3. <input type="text"/>                       | <input type="checkbox"/> |     |      |       | \$ _____ |
| * Alternative Choice No. <input type="text"/> | <input type="checkbox"/> |     |      |       | \$ _____ |

\* Alternative Choice—In event of cancellation or over enrollment, your second choice.

**TOTAL CREDIT-FREE WORKSHOP FEES \$ \_\_\_\_\_**  
**REGISTRATION FEE \$ 5.00**  
**TOTAL COST OF CREDIT-FREE WORKSHOPS \$ \_\_\_\_\_**

**FOR COMMUNITIES IN ACTION WORKSHOPS ONLY:**

| Workshop No.            | Date | Time | Title | Fee      |
|-------------------------|------|------|-------|----------|
| 1. <input type="text"/> |      |      |       | \$ _____ |
| 2. <input type="text"/> |      |      |       | \$ _____ |
| 3. <input type="text"/> |      |      |       | \$ _____ |
| 4. <input type="text"/> |      |      |       | \$ _____ |
| 5. <input type="text"/> |      |      |       | \$ _____ |
| 6. <input type="text"/> |      |      |       | \$ _____ |

**TOTAL COMMUNITIES IN ACTION WORKSHOP FEES \$ \_\_\_\_\_**  
**TOTAL AMOUNT DUE AND ENCLOSED \$ \_\_\_\_\_**

**FULL PAYMENT MUST ACCOMPANY MAIL REGISTRATION**

Make checks payable to:  
 Division of Continuing Education, AE77-4

Send to:  
 Credit-Free Workshops, AE77-4  
 Division of Continuing Education  
 P.O. Box 835  
 Amherst, MA 01002

**OFFICE USE ONLY**

AE77-4  
 Total Amount Due \$ \_\_\_\_\_  
 Amount Received \$ \_\_\_\_\_  
☐ Cash  
☐ Check No. \_\_\_\_\_  
☐ S.C.F.W.  
 Received By \_\_\_\_\_  
 Date Received \_\_\_\_\_  
 Comments: \_\_\_\_\_



## BGS Fire Science

The BGS in Fire Science is designed to build upon the Associate's degree in Fire Science Technology (or its equivalent in appropriate course work) from the community colleges. Firefighters in both public and private agencies, and people considering such careers may choose one of three possible career tracks: Fire Science Administration, Fire Science Education, and Fire Science Technology. There is considerable flexibility within the requirements of each track allowing student and advisor to plan a program tailored to specific needs and interests. This cooperative effort between UMass/Amherst and the community colleges is intended to produce highly competent professional firefighters for the Commonwealth.

### Requirements:

1. The general BGS regulations described above apply, except that students must have earned the A.S. degree in Fire Science Technology (or its equivalent), and no BGS Proposal Form is required.

2. Effective for all students who enter the degree after summer, 1976, introductory courses, some of them usually taken as part of the A.S. program, are required as outlined here:

**Fire Science Administration:** Introduction to Psychology, Introduction to Sociology, Introduction to Management, Financial and Managerial Accounting, Introduction to Logic, and Introduction to Problem Solving Using the Computer.

**Fire Science Education:** Introduction to Psychology, Introduction to Sociology, Public Speaking.

**Fire Science Technology:** College Calculus (2 semesters), General Physics for Science Majors (2 semesters with lab), General Chemistry for Science Majors (2 semesters with lab).

3. Effective for all students who enter the degree after summer, 1976, a minimum of 15 credits in UMass junior-senior level courses in one career track must be selected and completed:

A. **Fire Science Administration** This option is for students who aspire to managerial positions within their firefighting organizations and therefore need advanced study in management, communications skills, political science, and sociology.

B. **Fire Science Education** This career track is intended for students who have a strong desire to teach in community college fire science programs. Such positions often require Master's degrees or doctorates, but this BGS program can provide a useful beginning in advanced courses in communications skills, education, psychology, and related departments. Each student in the education option must complete a supervised internship in community college fire science instruction.

C. **Fire Science Technology** The Division of Continuing Education and the UMass School of Engineering are now designing a degree that will allow firefighters to complete BGS requirements in technical training beyond the A.S. degree in subject areas like hazardous materials, radiation protection, forest protection, combustion, safety engineering, and hydraulics.

Interested students should contact one of the Student Services counselors at 545-3430 for complete course lists and other information. UMass courses that may be used to satisfy some of the above requirements can be found in this catalog under the following department designations and numbers:

ACCTG 120, 130; BGS 201; COINS 122,201; COMSTU 121, 210; EDUC 290A, 290B, 290D; GB FIN 260; HIST 337; JS 201, 391D; LEGAL 201, 202, 290D; MGT 201, 214, 230, 231; POLSCI 223, 226, 260; PSYCH 101, 280; SOCIOLOGY 105, 224.

## BGS Courses

BGS courses are offered by the Division for University credit, and are meant either to serve the special educational needs of older, part-time students, or to provide BGS degree candidates with training in areas of concentration not available in regular University course offerings. BGS courses offered this semester are:

|          |                                                                        |
|----------|------------------------------------------------------------------------|
| BGS 100B | Women and the Life-Career Process (Back to School—Into the Job Market) |
| BGS 201  | Occupational Safety and Health Management                              |
| BGS 220A | Contemporary Practices in Corrections                                  |
| BGS 221A | A Criminal Justice Study in Victimization                              |

For a complete description of each BGS course, see Evening College Course Descriptions beginning on page 13.

BGS 100B

# WOMEN

**Women and the Life-Career Process: Back To School—Into the Job Market** focuses on a brief summary of Women/Work/Education with a concentration on Personal Life Planning, Career Development and Women's Issues as they relate to working women. The course is designed to allow women to experience a planned personal and professional development process, listen and interact with guest speakers, visit various job locations, and complete a project in connection with women and work.

## and the Life-



# Career Process

# DAY/LOCATION SCHEDULE

## MONDAY

ACCTG 120/Introduction to Financial Accounting  
 ANTH 102/Introduction to Archaeology  
 ART 117/Introduction to Visual Arts  
 ART 210/Design I  
 ART 211/Design II  
 ART 220/Painting I  
 BGS 100B/Introduction to Job Market  
 COMSTU 225/History and Development of Motion Picture  
 CONTED 0504/Basic Reference  
 ECON 103/Introduction to Microeconomics  
 EDUC 290A/Photography I  
 EDUC 290N/How to Survive  
 EDUC D 205/Aesthetic Elements in the Teaching Learning Process  
 EDUC P 390D/Curriculum Models in Early Childhood Education  
 EDUC P 690D/Curriculum Models in Early Childhood Education  
 ENGL 262/Modern Novel: 1930-1960  
 FDAGEN 261/Housing Design and Construction  
 GB FIN 201/Corporation Finance  
 HIST 141/European History, 1815 to the Present  
**HIST 333/History of American Westward Expansion, 1763-1893**  
 HRTA 211/Food Service Management  
 LEGAL 201/Introduction to Legal Studies  
 MATH 121/Mathematics for Business II  
 MATH 128/Calculus for the Life and Social Sciences II  
**MGT 231/Administrative Theory**  
 MUSIC 253/History of Jazz  
 NURSE 200B/Pathophysiology  
 PHYSIC 100/Introduction to Physics  
 PLSOIL 115/Plant Environment and Crop Production  
 POLSCI 323/Public Personnel Administration  
**POLSCI 323/Public Personnel Administration**  
 PSYCH 101/Elementary Psychology  
 PSYCH 120/Psychology as a Natural Science  
**PSYCH 252/Drugs and Behavior**  
 PSYCH 270/Personality  
 RHET 110A/Language and Speaking  
 SOCIOLOG 276/Drugs and Society

## TUESDAY

AFROAM 151/Culture and Literature  
 ANTH 371/Human Evolution  
 ART 102/Drawing Composition  
 ART 295/American Art  
**ART 295/American Art**  
 BGS 201/Occupational Safety and Health Management  
 BGS 221A/Criminal Justice Study in Victimization  
 BOTANY 101/General Botany

COINS 122/Introduction to Problem-Solving with the Computer  
 COMSTU 121/Introduction to Mass Communications  
 ECON 104/Introduction to Macroeconomics  
**ECON 281/Regional Economics**  
 EDUC D 262/Principles and Methods of Teaching Elementary Science  
 EDUC H 747/Family Counseling  
 EDUC P 790D/Design of Educational Material  
 EDUC T 575/Diagnosis of Reading Disabilities  
 ENGL 161/Nature and Literature  
 FRENCH 120/Elementary French  
 GEOL 107/History of Life  
 ITAL 110/Elementary Italian  
 LING 211/Introduction to Psycholinguistics  
 MATH 110/Topics in Contemporary Math  
 MGT 265/Business and Its Environment  
**MGT 230/Managerial Behavior**  
 MGT 390E/Women in Business  
 MKTG 201/Fundamentals of Marketing  
**NURSE 310/Currents in Nursing**  
 PHIL 105/Introduction to Philosophy  
 PLSOIL 110/Plant Propagation  
**POLSCI 261/Civil Liberties**  
 PSYCH 145/Statistics in Psychology  
 PSYCH 301/Educational Psychology  
 SOCIOLOG 103/Social Problems  
 SPAN 110/Elementary Spanish  
 WOST 190A/Women in Western Civilization  
 ZOOL 101/Introduction to Zoology

## WEDNESDAY

ACCTG 130/Introduction to Managerial Accounting  
**AFROAM 111/Survey of African Art**  
 ART 210/Design I  
 ART 211/Design II  
 ART 220/Painting I  
**ASTRON 100/Exploring the Universe**  
 BGS 220A/Contemporary Practices in Corrections  
 COMSTU 202/Small Group Communication  
 CONTED 0543/Government Publication  
 ECON 211/Money and Banking  
 EDUC 590M/Management and Change  
 EDUC H 220/Human Relations Lab  
 EDUC H 520/Human Relations Lab  
 EDUC P 251/Foundations of Education  
 EDUC T 290S/Improvisational Drama  
**ENGL 281/American Folklore**  
 ENGL 284/Literature and Psychological Criticism  
 GB FIN 260/Introduction to Law  
 GERMAN 110/Elementary German  
 HIST 339/U.S. Since Pearl Harbor  
 LEGAL 202/Intermediate Legal Studies  
 MATH 121/Mathematics for Business II  
 MATH 128/Calculus for the Life and Social Sciences  
 MGT 201/Principles of Management

**MKTG 222/Marketing Communications**  
 MUSIC 385B/Introduction to Electronic Music  
**NURSE 290A/Oncology Nursing**  
 PHIL 125/Introduction to Logic  
 PLSOIL 120/Organic Farming and Gardening  
 POLSCI 261/Civil Liberties  
 PSYCH 230/Motivation  
 PSYCH 325/Abnormal Psychology  
 SPAN 120/Elementary Spanish

## THURSDAY

ACCTG 210/Business Applications of the Computer  
 ANTH 104/Introduction to Cultural Anthropology  
 ART 102/Drawing Composition  
 ART 215/History of Decorative Arts  
 ASTRON 101/The Solar System  
 COINS 201/Assembly Language Programming  
**COMSTU 204/Persuasion Theory**  
**ECON 314/State and Local Public Finance**  
 EDUC D 290N/Models of Early Childhood Education  
 EDUC D 590N/Models of Early Childhood Education  
 ENGL 341/Creative Writing  
**ENT 126/Insects and Man**  
 ENT 266/Practical Beekeeping  
 F&R EC 110/World Food and Natural Resources  
 GB FIN 230/Principles of Insurance  
 HIST 186/New Approaches to American History  
 I E 360/Safety Engineering  
 MATH 110/Topics in Contemporary Math  
 MGT 214/Personnel Management  
 NURSE 250/Nursing Process  
**PHIL 218/American Philosophy**  
 PHIL 240/Philosophical Approaches to Science  
 PSYCH 263/Adolescent Psychology  
 RHET 100G/Elements of Writing  
 SOCIOLOG 293/Social Policy Planning  
 WOST 290G/Sociology of Women  
 ZOOL 101/Introduction to Zoology

*Courses appearing in italics are to be held in Springfield.*

**Courses appearing in bold are to be held at Holyoke Community College; check Schedule of Courses for exact locations.**

**the arts directory**  **AES**  
 A unique listing of artists, craftspeople, performers and writers in the western Massachusetts area. For information, listing fees, or to subscribe, call 545-2013.  
**published by**  
**arts extension service**



# SCHEDULE OF COURSES

ROOM ASSIGNMENTS are posted in Hills House Lobby outside of the Continuing Education Records Office. ALL STUDENTS should check the board for classroom location when registering or some time before the first class meeting. Students preregistered by January 6, will receive notification of room assignment by mail prior to the first day of class. Please avoid unnecessary phone calls by obtaining your room assignments early.

DEPT COURSE SCHEDULE TITLE CORE CR  
SEC NUMBER MEETING TIMES BLOC ROOM

## A-C-C-G-U-N-T-I-N-G

ACCTG 120\* INTRO FINAN ACCTG 3CR  
1 010035 M 19.00-22.00  
ACCTG 130\* INTRC TO MGRL ACCTG 3CR  
1 010244 W 19.00-22.00  
ACCTG 210\* BUS APPL OF COMPUTER 3CR  
1 010422 TH 19.00-22.00

## A-F-R-D---A-M-E-R-I-C-A-N S-T-U-D-I-E-S

AFROAM 111\* SURV OF AFRICAN ART C 3CR  
1 010600 W 19.00-22.00 HCC A-340  
AFROAM 151\* CULTURE & LITERATURE C 3CR  
1 010732 TU 19.00-22.00

## A-N-T-H-R-O-P-O-L-O-G-Y

ANTH 102\* INTRC TO ARCHAEOLOGY C 3CR  
1 010960 M 19.00-22.00  
ANTH 104\* INTRC CLTURAL ANTH C 3CR  
1 011143 TH 19.00-22.00  
ANTH 371\* HUMAN EVOLUTION 3CR  
1 011321 TU 19.00-22.00

## A-R-T

ART 102\* DRAWING COMPOSITION C 3CR  
1 011509 TUTH 19.00-22.00  
ART 117\* INTRC TO VISUAL ARTS C 3CR  
1 011621 M 19.00-22.00  
ART 210\* DESIGN I 3CR  
1 011869 MW 19.00-22.00 LAB FEE \$3  
ART 211\* DESIGN II 3CR  
1 012042 MW 19.00-22.00 LAB FEE \$3  
ART 215\* HISTORY OF DEC ARTS 3CR  
1 012220 TH 19.00-22.00  
ART 220\* PAINTING I C 3CR  
1 012403 MW 19.00-22.00  
ART 290R ARTS MANAGEMENT 3CR  
91 W 19.00-22.00  
ART 295\* AMERICAN ART C 3CR  
1 012580 TU 19.00-22.00  
2 012617 TU 19.00-22.00 HCC A-340

## A-S-T-R-O-N-O-M-Y

ASTRON 100\* EXPLOFING UNIVERSE E 3CR  
1 012755 W 19.00-22.00 HCC A-342  
ASTRON 101\* THE SOLAR SYSTEM E 3CR  
1 012977 TH 19.00-22.00

## B-A-C-H-E-L-O-R D-E G-E-N-E-R-A-L S-T-U-D-I-E-S

BGS 100B INTRO TO JOB MARKET 3CR  
91 013150 M 19.00-22.00  
BGS 201\* OCC SFTY & HLTH MGT 3CR  
1 013150 M 19.00-22.00  
BGS 220A CONTEM PRACIT IN CORR 3CR  
91 013516 W 19.00-22.00  
BGS 221A CRIM JUST SCLD/VICT 3CR  
91 013658 TU 19.00-22.00

DEPT COURSE SCHEDULE TITLE CORE CR  
SEC NUMBER MEETING TIMES BLOC ROOM

## B-O-T-A-N-Y

BOTANY 101\* GENERAL BCTANY E 3CR  
1 013876 TU 19.00-22.00 LAB FEE \$2

## C-O-M-P-U-T-E-R & I-N-F-C-R-M-A-T-I-O-N S-C-I-E-N-C-E

COINS 122\* INTR PRF SOLV W/COMP E 4CR  
1 014059 TU 19.00-22.00 LAB FEE \$10  
COINS 201\* ASSEMBLY LANG PROGRAM 4CR  
1 014237 TH 19.00-22.00 LAB FEE \$10

## C-D-M-M-U-N-T-I-C-A-T-I-O-N S-T-U-D-I-E-S

COMSTU 121\* INTRC TO MASS COMM D 3CR  
1 014415 TU 19.00-22.00  
COMSTU 202\* SMALL GRP COMMUNICAT 3CR  
1 014597 W 19.00-22.00  
COMSTU 204\* PERSUASION TECH-Y 3CR  
1 014775 TH 19.00-22.00 HCC A-340  
COMSTU 225\* HIST & DEV MCT PICT 3CR  
1 014953 M 19.00-22.00 LAB FEE \$10

## C-D-N-T-I-N-U-I-N-G E-D-U-C-A-T-I-O-N

CONTEC 0504 BASIC REFERENCE CCR  
1 015136 M 19.00-22.00  
CONTEC 0543 GOVMT PUBLICATIONS CCR  
1 015314 W 19.00-22.00

## E-C-C-N-O-M-I-C-S

ECCN 103\* INTRC TO MICROECON D 3CR  
1 015456 M 19.00-22.00  
ECCN 104\* INTRC TO MACROECON C 3CR  
1 015674 TU 19.00-22.00  
ECCN 211\* MONEY AND BANKING C 3CR  
1 015852 W 19.00-22.00  
ECCN 261\* REGIONAL ECONOMICS D 3CR  
1 016035 TU 19.00-22.00 HCC A-342  
ECCN 314\* STATE & LAEL PUB FIN D 3CR  
1 016213 TH 19.00-22.00 HCC A-342

## E-D-U-C-A-T-I-O-N

EDUC 290A PHOTOGRAPHY I 3CR  
91 016395 M 19.00-22.00  
EDUC 290N TEACHER SURVIVAL 3CR  
91 M 19.00-22.00  
EDUC 590M MGT AND CHANGE 3CR  
91 W 19.00-22.00

## E-D-U-C C-E-S-I-G-N-S E-F-F-E-C-T L-E-A-R-N-I-N-G

EDUC D 205\* AES ELM IN TECH/LRNG 3CR  
1 016573 M 19.00-22.00  
EDUC D 262\* P/Y TECH ED SCI 3CR  
1 016751 TU 19.00-22.00



| DEPT                                      | COURSE | SCHEDULE             | TITLE     | CCRE        | CR |
|-------------------------------------------|--------|----------------------|-----------|-------------|----|
| SEC                                       | NUMBER | MEETING TIMES        | BLDG      | RCCM        |    |
| EDUC D                                    | 290N   | MOGLS EAR CHLDHD ED  |           | 3CR         |    |
| 91                                        | 016939 | TH 19.00-22.00       |           |             |    |
| EDUC D                                    | 590N   | MODELS EAR CHLDHD ED |           | 3CR         |    |
| 91                                        |        | TH 19.00-22.00       |           |             |    |
| E-D-U-C H-U-M A-P-P-L S-O-C & B-E-H       |        |                      |           |             |    |
| S-C-I                                     |        |                      |           |             |    |
| EDUC H                                    | 220*   | HLMAN RELATICNS LAB  |           | 3CR         |    |
| 1                                         | 017112 | W 19.00-22.00        |           |             |    |
| EDUC H                                    | 520*   | HUMAN RELATICNS LAB  |           | 3CR         |    |
| 1                                         | 017294 | W 19.00-22.00        |           |             |    |
| EDUC H                                    | 747*   | FAMILY CCUNSELING    |           | 3CR         |    |
| 1                                         | 017472 | TU 19.00-22.00       |           |             |    |
| E-D-U-C P-O-L-I-C-Y S-T-U-D-I-E-S         |        |                      |           |             |    |
| EDUC P                                    | 251*   | FOUNDATIONS OF EDUC  |           | 3CR         |    |
| 1                                         | 017650 | W 19.00-22.00        |           |             |    |
| EDUC P                                    | 390C   | CURRIC MCD IN ECE    |           | 3CR         |    |
| 91                                        | 017838 | W 19.00-22.00        |           |             |    |
| EDUC P                                    | 690C   | CURRIC MCDS IN ECE   |           | 3CR         |    |
| 91                                        | 018011 | M 19.00-22.00        |           |             |    |
| EDUC P                                    | 790C   | DES CF EDUC MATERIAL |           | 3CR         |    |
| 91                                        | 018193 | TU 19.00-22.00       |           | LAB FEE \$3 |    |
| E-D-U-C T-R-A-N-S-D-I-S-C-I-P-L-I-N-A-R-Y |        |                      |           |             |    |
| EDUC T                                    | 575*   | DIAGNOSIS READ DISAB |           | 3CR         |    |
| 1                                         | 018371 | TU 19.00-22.00       |           |             |    |
| EDUC T                                    | 290S   | IMPROVISAT DRAMA     |           | 3CR         |    |
|                                           |        | W 19.00-22.00        |           |             |    |
| E-N-G-L-I-S-H                             |        |                      |           |             |    |
| ENGL                                      | 161*   | NATURE AND LIT       | C         | 3CR         |    |
| 1                                         | 018559 | TU 19.00-22.00       |           |             |    |
| ENGL                                      | 262*   | MCD NOVEL 1930-1960  | C         | 3CR         |    |
| 1                                         | 018737 | M 19.00-22.00        |           |             |    |
| ENGL                                      | 281*   | AMERICAN FOLKLORE    | C         | 3CR         |    |
| 1                                         | 018915 | W 19.00-22.00        | HCC A-344 |             |    |
| ENGL                                      | 284*   | LIT & PSYCH CRIT     | C         | 3CR         |    |
| 1                                         | 019052 | W 19.00-22.00        |           |             |    |
| ENGL                                      | 341*   | CREATIVE WRITING     |           | 3CR         |    |
| 1                                         | 019270 | TH 19.00-22.00       |           | LAB FEE \$5 |    |
| E-N-T-O-M-O-L-O-G-Y                       |        |                      |           |             |    |
| ENT                                       | 126*   | INSECTS AND MAN      | E         | 3CR         |    |
| 1                                         | 019458 | TH 19.00-22.00       | HCC A-344 |             |    |
| ENT                                       | 266*   | PRACT BEEKEEPING     |           | 3CR         |    |
| 1                                         | 019636 | TH 19.00-22.00       |           | LAB FEE \$2 |    |
| F-O-O-D A-N-D R-E-S-C-U-R-C-E             |        |                      |           |             |    |
| E-C-O-N-C-M-I-C-S                         |        |                      |           |             |    |
| F&R EC                                    | 110*   | WORLD FC & NAT RES   | C         | 3CR         |    |
| 1                                         | 019814 | TH 19.00-22.00       |           |             |    |
| F-O-O-D & A-G-R-I-C-U-L-T-U-R-A-L         |        |                      |           |             |    |
| E-N-G-I-N                                 |        |                      |           |             |    |
| FDAGEN                                    | 261*   | HOUSNG DES & CNSTRTN |           | 3CR         |    |
| 1                                         | 019996 | M 19.00-22.00        |           | LAB FEE \$8 |    |

| DEPT                                  | COURSE | SCHEDULE             | TITLE     | CCRE           | CR |
|---------------------------------------|--------|----------------------|-----------|----------------|----|
| SEC                                   | NUMBER | MEETING TIMES        | BLDG      | RCCM           |    |
| F-R-E-N-C-H                           |        |                      |           |                |    |
| FRENCH                                | 120*   | ELEMENTARY FRENCH    |           | 3CR            |    |
| 1                                     | 020173 | TU 19.00-22.00       |           |                |    |
| G-E-N-E-R-A-L B-U-S-I-N-E-S-S         |        |                      |           |                |    |
| F-I-N-A-N-C-E                         |        |                      |           |                |    |
| GB FIN                                | 201*   | CORPORATION FINANCE  |           | 3CR            |    |
| 1                                     | 020351 | M 19.00-22.00        |           |                |    |
| GB FIN                                | 230*   | PRIN OF INSUPANCE    |           | 3CR            |    |
| 1                                     | 020539 | TH 19.00-22.00       |           |                |    |
| GB FIN                                | 260*   | INTRC TC LAW         |           | 3CR            |    |
| 1                                     | 020717 | W 19.00-22.00        |           |                |    |
| G-E-G-L-O-G-Y                         |        |                      |           |                |    |
| GEGL                                  | 107*   | HISTORY CF LIFE      | E         | 3CR            |    |
| 1                                     | 020859 | TU 19.00-22.00       |           | LAB FEE \$4.50 |    |
| G-E-R-M-A-N                           |        |                      |           |                |    |
| GERMAN                                | 110*   | ELEM GERMAN          |           | 3CR            |    |
| 1                                     | 021072 | W 19.00-22.00        |           |                |    |
| H-I-S-T-O-R-Y                         |        |                      |           |                |    |
| HIST                                  | 141*   | EUR HIST 1815-PRESNT | C         | 3CR            |    |
| 1                                     | 021250 | M 19.00-22.00        |           |                |    |
| HIST                                  | 186*   | NEW APPRACH AM HIST  | C         | 3CR            |    |
| 1                                     | 021438 | TH 19.00-22.00       |           |                |    |
| HIST                                  | 333*   | HIST AMER WEST EXP   | C         | 3CR            |    |
| 1                                     | 021618 | M 19.00-22.00        | HCC A-340 |                |    |
| HIST                                  | 339*   | US SINCE PEARL HARB  | C         | 3CR            |    |
| 1                                     | 021758 | W 19.00-22.00        |           |                |    |
| H-O-T-E-L R-E-S-T & T-R-A-V-E-L       |        |                      |           |                |    |
| A-D-M-I-N                             |        |                      |           |                |    |
| HRTA                                  | 211*   | FOOD SERVICE MANGMT  |           | 3CR            |    |
| 1                                     | 021976 | M 19.00-22.00        |           |                |    |
| I-N-D-U-S-T E-N-G-I-N & C-P           |        |                      |           |                |    |
| R-E-S-E-A-R-C-H                       |        |                      |           |                |    |
| I E                                   | 300*   | SAFETY ENGINEERING   |           | 3CR            |    |
| 1                                     |        | TH 19.00-22.00       |           |                |    |
| I-T-A-L-I-A-N                         |        |                      |           |                |    |
| ITAL                                  | 110*   | ELEMENTARY ITALIAN   |           | 3CR            |    |
| 1                                     | 022337 | TU 19.00-22.00       |           |                |    |
| L-E-G-A-L S-T-U-D-I-E-S P-R-O-G-R-A-M |        |                      |           |                |    |
| LEGAL                                 | 201*   | INTRC LEGAL STUDIES  |           | 3CR            |    |
| 1                                     | 022515 | M 19.00-22.00        |           | LAB FEE \$4    |    |
| LEGAL                                 | 202*   | INTER LEGAL STUDIES  |           | 3CR            |    |
| 1                                     | 022657 | W 19.00-22.00        |           | LAB FEE \$4    |    |
| L-I-N-G-U-I-S-T-I-C-S                 |        |                      |           |                |    |
| LING                                  | 211*   | INTRC TC PSYCHCLING  |           |                |    |
| 1                                     | 022875 | TU 19.00-22.00       |           |                |    |

DEPT COURSE SCHEDULE TITLE CORE CR  
SEC NUMBER MEETING TIMES BLOG RCCM

M-A-T-H-E-M-A-T-I-C-S

MATH 110\* TPCS IN CONTEMP MATH E 3CR  
1 023058 TUTH 19.00-20.30  
MATH 121\* MATH FOR BUSINESS II E 3CR  
1 023236 MW 19.00-20.30  
MATH 128\* CALC LIFE-SOC SCI II E 3CR  
1 023414 MW 19.00-20.30

M-A-N-A-G-E-M-E-N-T

MGT 201\* PRINCIPLES OF MGT 3CR  
1 023556 W 19.00-22.00  
MGT 214\* PERSONNEL MANAGEMENT 3CR  
1 023E01 TH 19.00-22.00  
MGT 230\* MANAGERIAL BEHAVIOR 3CR  
1 024015 TU 19.00-22.00 HCC A-344  
MGT 231\* ADMIN THEORY 3CR  
1 024197 M 19.00-22.00 HCCA-342  
MGT 265\* BUS & ITS ENVIRONMENT 3CR  
1 024375 TU 19.00-22.00  
MGT 390E WOMEN IN BUSINESS 3CR  
91 024553 TU 19.00-22.00

M-A-R-K-E-T-I-N-G

MKTG 201\* FUNC OF MKTG 3CR  
1 024731 TU 19.00-22.00  
MKTG 222\* MKTG COMMUNICATIONS 3CR  
1 024919 W 19.00-22.00 HCC A-346

M-U-S-I-C

MUSIC 253\* HISTORY OF JAZZ 3CR  
1 025056 M 19.00-22.00  
MUSIC 385B SP-INTRO TO ELEC MUS 3CR  
91 025274 W 19.00-22.00

N-U-R-S-E-I-N-G

NURSE 203B PATHOPHYSIOLOGY 3CR  
91 025452 M 19.30-22.30  
NURSE 250\* NURSING PROCESS 6CR  
1 025630 TH 18.00-21.00  
NURSE 290A CANCECLOGY NURSING 3CR  
91 025818 W 18.30-21.30 SFLO  
NURSE 310\* CURRENTS IN NURSING 3CR  
1 025950 TU 19.00-22.00 SFLO

P-H-I-L-C-S-O-P-H-Y

PHIL 105\* INTRO TO PHIL C 3CR  
1 026351 TU 19.00-22.00  
PHIL 125\* INTAC TO LOGIC E 3CR  
1 026535 W 19.00-22.00  
PHIL 218\* AMERICAN PHILOSOPHY C 3CR  
1 026717 TH 19.00-22.00 HCCA-346  
PHIL 240\* PHIL APPROCHS TO SCI E 3CR  
1 026899 TH 19.00-22.00

P-H-Y-S-I-C-S

PHYSIC 100\* AN INTRC TO PHYSICS E 3CR  
1 027072 M 19.00-22.00

P-L-A-N-T & S-O-I-L S-C-I-E-N-C-E-S

PLSCIL 110\* PLANT PROPAGATION 3CR  
1 027259 TU 19.00-22.00 LAB FEE\$10

DEPT COURSE SCHEDULE TITLE CORE CR  
SEC NUMBER MEETING TIMES BLOG RCCM

PLSCIL 115\* PLT ENV & CRCP PRCD E 3CR  
1 027438 M 19.00-22.00  
PLSCIL 120\* CRG FARM & GARCENG E 3CR  
1 027616 W 19.00-22.00 LAB FEE \$7.50

P-O-L-I-T-I-C-A-L S-C-I-E-N-C-E

PCLSCI 261\* CIVIL LIBERTIES D 3CR  
1 027758 W 19.00-22.00 HCC A-346  
2 027825 TU 19.00-22.00  
PCLSCI 323\* PUB PERSONNEL ADMIN 3CR  
1 028008 M 19.00-22.00  
2 028039 M 19.00-22.00 HCC A-344

P-S-Y-C-H-O-L-O-G-Y

PSYCH 101\* ELEMENTARY PSYCH D 3CR  
1 028217 M 19.00-22.00  
PSYCH 120\* PSYCH AS NAT SCI 3CR  
1 028399 M 19.00-22.00  
PSYCH 145\* STATISTICS IN PSYCH 3CR  
1 028577 TU 19.00-22.00  
PSYCH 230\* MOTIVATION D 3CR  
1 028755 W 19.00-22.00  
PSYCH 252\* DRUGS & BEHAVIOR 3CR  
1 028933 M 19.00-22.00 HCCA-346  
PSYCH 263\* ADOLESCENT PSYCH C 3CR  
1 029116 TH 19.00-22.00  
PSYCH 270\* PERSONALITY C 3CR  
1 029258 M 19.00-22.00  
PSYCH 301\* EDUCATIONAL PSYCH D 3CR  
1 029475 TU 19.00-22.00  
PSYCH 325\* ABNORMAL PSYCH D 3CR  
1 029654 W 19.00-22.00

R-H-E-T-O-R-I-C

RHET 100G ELEMTS OF WRITING E 3CR  
91 029832 TH 19.00-22.00  
RHET 110A LANGUAGE & SPEAKING E 3CR  
91 030019 M 19.00-22.00

S-O-C-I-O-L-O-G-Y

SOCICL 103\* SOCIAL PROBLEMS D 3CR  
1 030151 TU 19.00-22.00  
SOCICL 276\* DRUGS & SOCIETY C 3CR  
1 030379 M 19.00-22.00  
SOCICL 293\* SOC POLICY PLANNING D 3CR  
1 030557 TH 19.00-22.00

S-P-A-N-I-S-H

SPAN 110\* ELEMENTARY SPANISH 3CR  
1 030735 TU 19.00-22.00  
SPAN 120\* ELEMENTARY SPANISH 3CR  
1 030913 W 19.00-22.00

W-O-M-E-N-I-S S-T-U-D-I-E-S

WGST 190A WOMEN IN WEST CIV 3CR  
91 031050 TU 19.00-22.00  
WGST 290G SOCICL OF WOMEN 3CR  
91 031278 TH 19.00-22.00

Z-O-O-L-O-G-Y

ZOOL 101\* INTRC ZOOCLOGY E 3CR  
LEC 1 031456 TU 19.00-21.00  
LAB 1 031487 TH 19.00-22.00 LAB FEE\$10

# PROGRAM ALTERNATIVES

The Division of Continuing Education, in association with the University of Massachusetts/Amherst, offers both credit and credit-free learning experiences to adults who are interested in continuing their education. While activities of the Division can range from one-day intensive learning seminars to degrees for working professionals who want to pursue their education on a part-time basis, all the learning experiences provided by the Division have, in common with University courses, high academic standards.

Because the adult learner pursuing an education on a part-time basis does not have ready access to the informal support and information sources available to full-time students on the University campus, the Division's Student Services staff of trained professionals are available to provide academic counseling and information referral to Continuing Education students. These professionals help students design transdisciplinary degree programs, investigate specialized educational resources both on and off campus, and arrange for credit by examination or for prior experience when appropriate.

Perhaps the most valuable asset of the Division of Continuing Education is its recognition of the need to integrate the adult students's learning experiences with his or her on-going professional/workday activities. The adult learner is a demanding and time conscious student who will not accept less than top quality from professionals who know their field and are able to communicate their expertise efficiently and effectively. The Division prides itself on its ability to satisfy the educational needs of a quality-conscious adult clientele by designing and delivering educational programs that respond to students' needs.

## The Continuing Education Unit (CEU)

The CEU is designed for in-service professionals and non-professionals who want to maintain a record of their participation in approved non-credit continuing education programs. It is not equivalent to academic credit, but it is applicable to appropriate learning experiences of adults at all levels from post-secondary to post-doctorate; for all classes of adult learners, whether vocational, technical, professional, managerial, or adults bent on personal improvement; and in all formats of teaching and learning. CEU's are generally transferable from one institution to another.

The Division of Continuing Education, University of Massachusetts/Amherst, will award a specified number of Continuing Education Units (CEUs) to each individual who successfully completes a workshop approved for the awarding of CEUs. Each CEU represents ten contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction. The number of CEUs per workshop is determined by the total number of contact hours. Awarding only some part of the CEUs offered in a workshop is not an option, and to receive CEUs, each workshop participant must attend the total number of contact hours required.

Students may request an official cumulative transcript of CEUs at any time. Send a written request, indicating the name and address of the recipient of the transcript to: CEU Transcript Request, Division of Continuing Education, P.O. Box 835, University of Massachusetts, Amherst, MA. 01002. A nominal fee of \$1 is charged after the first request.

## ARTS EXTENSION

The Arts Extension Service is a community development program which works to meet the needs of continuing education in the arts. One objective of the AES is to help develop effective and self-sufficient community arts organizations.

Activities include: consulting services in technical and management problems; workshops in community arts management and group dynamics; projects servicing the arts interests and needs of older people, inner city people, rural communities and other special interest groups; maintenance of the Arts Directory, a listing of regional artists; a series of arts seminars and conferences; a booking referral service for artists; Communities to Campus, a program aimed at making UMass/Amherst campus events more available to communities, and "The New England Artists Festival and Showcase", which brings the art and performance talent of western Massachusetts together for a major two-day celebration.

AES also serves as an arts reference center, providing information about and assistance with arts activities and services in western New England.

The Arts Extension Service publishes:

- The Arts Directory
- Arts Festivals; A Work Kit
- The Logo Handbook
- The AES News



For information contact Arts Extension Service, Hills House North, University of Massachusetts, Amherst, MA 01003, (413) 545-2013.

## COMMUNITIES IN ACTION

### Great Decisions

Great Decisions has been a national program with worldwide concerns since 1954. It is sponsored nationally by the Foreign Policy Association—a non-profit, non-partisan organization which since 1918 has been facilitating the understanding of significant issues in U.S. foreign policy, and stimulating voluntary and constructive participation in world affairs—and is sponsored locally by the State Coordinator's office for Great Decisions at Continuing Education.

Great Decisions involves the formation of informal community-based discussion groups. Participants usually examine eight crucial issues in current United States foreign policy, assessing background information, evaluating diverse opinions about the alternative directions for foreign policy, and communicating their informed opinions to governmental decision makers.

In 1977, the Great Decisions booklet will explore these topics, each of which requires about an hour's reading:



- Western Europe in Transition: What Impact on the Atlantic Partnership?
- Southern Africa: End of White Supremacy?
- The Middle East Cauldron: After Lebanon, What Next?
- Spread of Deadly Weapons: Can Proliferation Be Checked?
- U.S.-Soviet Relations: Whatever Happened to Detente?
- China and the U.S.: Where Should We Go From Here?
- Food and Population: Was Malthus Right?
- Panama and Cuba: What Choices for the U.S.?

For further information about Great Decisions, or for help in facilitating a group or participating in one, please contact Lin Maria Riotto, Division of Continuing Education, 213 Hills House North, UMass/Amherst, 01003, or phone (413) 545-3410.

### Workshops

Communities in Action workshops are designed to meet some of the training needs of community organizations. This series of short, intensive and inexpensive workshops is intended for board members, staff and volunteers of citizen councils and non-profit community organizations of all types. Among the topics included are leadership, decision-making, organizational development, volunteer management, planning and budgeting, public relations, government and more. Instructors for each of the workshops are practitioners with both theoretical knowledge and practical experience in the topic area. In most cases workshops are three to five hours in length and after just spending those few hours in the classroom, participants can return to their organizations bringing with them new skills and ideas.

While most workshops are held on the University campus, we are prepared to organize existing and new training workshops for individual organizations in their own communities.

### Dialogue '77

Dialogue '77 is a low cost, high quality programming resource for individuals and organizations. It offers a series of options which provide the opportunity to discuss issues of social concern. They are intended to stimulate dialogue in two formats. One, called "The Written Word," encourages a reasonable amount of reading prior to the group's meetings, the number of which are determined by the participants. The second format is called "The Visual Image." Participants will meet once, view a film and discuss its issues.

Guides are provided for group leaders who are selected in each group by its members to keep the discussion moving. The guides consist of background materials for the two-hour sessions and include ideas, insights, information, suggested readings, discussion questions, and bibliographies, together with instructions for participants and for the discussion leader. The approach is lively, informal, non-academic, and is planned to interest people from various walks of life and engage them in discussions of current social issues.

## LIBRARY SCIENCE PROGRAM

The Division of Continuing Education, by arrangement with the University of Rhode Island, offers Library Science courses each semester which may be applied to a University of Rhode Island Master's degree in Library Science.

The MSLS degree requires 36 hours of credit, including six hours of electives. Half of the requirements for the degree may be completed through extension before the participant continues in residence at the University of Rhode Island's campus in Kingston. In order to be eligible for the degree program, students must possess a Bachelor's degree from an accredited college or university with an average of B or better. It is not necessary to be enrolled in the full degree program to receive credit for the courses, although a Bachelor's degree is still required. Students who wish to be admitted to the degree program should apply prior to obtaining 12 credits through Evening College.

Persons interested in further information about application procedures for the full degree program should contact the Dean's Office, Graduate Library School, University of Rhode Island, 74 Lower College Road, Kingston, R.I. 02881, telephone (401) 792-2947. Registration for individual Library Science courses is done through the Division of Continuing Education.

### Spring 1977 Library Science Courses\*

#### Basic Reference

##### CONTED 504

Practical experience in the use of basic reference materials, with readings and discussion of the philosophy and administrative aspects of reference work. Course Fee: \$140.

#### Government Publications

##### CONTED 543

Survey of the publishing activities and publications of national, state, and local governments, with emphasis on the publications of the United States government. Prerequisite: Conted 504. Course Fee: \$140.

*\*All Library Science courses are listed in the Schedule of Courses under CONTED. For registration purposes, use the Schedule of Courses for course names and registration numbers.*

American Library Association Accreditation has been withdrawn from the URI MSLS Program. Those students enrolled in the program as of July 1976 and who complete the program by January 1978, will be considered to have graduated from an ALA-accredited program.

## SECOND BACHELOR'S DEGREE PROGRAM

In cooperation with the University of Massachusetts' Admissions Office, the Division of Continuing Education is now offering a part-time program to prepare students in a variety of fields for a second Bachelor's degree.

The purpose of the Second Bachelor's Degree Program is to offer those students who have earned a bachelor's degree the opportunity to do *part-time*, undergraduate study in a field unrelated to previous degree studies. The program is available: 1) as a route for those students who want to complete a prerequisite, undergraduate major in an area different from their first bachelor's degree study in preparation for graduate studies; or 2) as a route for those students who do not need to do graduate studies in order to meet job/career requirements or changes, but who do require additional education.

The graduate of the University of Massachusetts must acquire a minimum of 30 credits in residence, fulfilling departmental and school or college degree requirements. Graduates of other institutions of higher learning must fulfill a minimum requirement of 45 credits in residence.

An appeal for waiver of the credit requirements may be

filed with the Board of Admissions and Records if all departmental requirements for completion of the second undergraduate degree have been met and the student has obtained departmental approval for the appeal.

Write to Bernadine Y. Freese, Coordinator, Post-Baccalaureate Programs, Continuing Education, 205 Hills North, UMass, Amherst, 01003 for counseling and application. The deadlines for applying are October 1 for the Spring and March 15 for the Fall. Late applications will be considered on a space-available basis. All academic policies and standards of the University, as well as the Division of Continuing Education, will apply.

## TEACHER EDUCATION PROGRAM

The Division of Continuing Education in cooperation with the Teacher Education Council (TEC) of the School of Education, offers a program for post-baccalaureate students that leads to teacher certification in elementary and secondary education. Most of the Teacher Education Programs require a two semester commitment. Coursework is taken the first semester and student teaching is completed the second semester. Unfortunately, we do not have a summer program at this time. It should be noted that this is *not* a graduate program. It is designed *only* for teacher certification.

### Teacher Education Programs

|                                               |                                     |
|-----------------------------------------------|-------------------------------------|
| Agricultural Education                        | Home Economics                      |
| Amherst Pelham Elementary Program             | Human Services                      |
| Bilingual Bi-Cultural Education               | Integrated Day Model                |
| Boston-English Project (Secondary)            | International Education             |
| Early Childhood Education                     | Mathematics                         |
| Education Through Work                        | Music                               |
| Elementary Education                          | New Mexico Cross-Cultural Education |
| English                                       | Off-Campus, England                 |
| Environmental Education                       | Physical Education                  |
| Explorations! (Individually Designed Program) | Russian                             |
| Future Studies                                | Science                             |
| German                                        | Social Studies                      |
|                                               | Spanish                             |
|                                               | Urban Education                     |

### Admission

In order to enroll in any certification program, all applicants must have a bachelor's degree and must be selected by the Coordinator of Post-Baccalaureate Programs as well as by the programs for which they are applying. Applicants need: (1) a formal application form, (2) two letters of recommendation, (3) official transcripts, (4) interview by the Coordinator of Post-Baccalaureate Programs.

During the interview, applicants should determine the amount of course work required and student teaching site information. Once applicants have been formally accepted to specific programs, they must return to the Coordinator for finalizing the admissions process and for registration counseling.

## Registration and Fees

Registration and fees are handled through the Division of Continuing Education. The course fee is \$105 per three-credit course plus the usual registration fees. Students enrolling in this program will be governed by the administrative policies of the Division of Continuing Education; all academic policies and standards of the University and the School of Education will apply.

## Program Application

For further information and an application form, write to Bernadine Freese, Division of Continuing Education, University of Massachusetts, Amherst, Massachusetts, 01003, Application deadline, April 1 for fall semester and November 1 for spring semester. Late applications will be considered on a space-available basis.

## TECHNICAL GUIDANCE CENTER

The Technical Guidance Center for Environmental Quality functions as an environmental outreach program providing educational resources to the general public. These resources include books, periodicals, and governmental reports, as well as film listings and directories on the Center's areas of interest which focus on pollution, energy sources and conservation, natural resources development and environmental standards and controls. The Center also provides information services and its own publication, *TGC Bulletin*.

The Technical Guidance Center is developing a series of community environmental programs for children and adults. Offerings will provide a better understanding of how environmentally related decisions affect all of us. The emphasis will be action oriented in an attempt to equip citizens and community groups with ways to interact responsibly in the decisionmaking process. Subject areas will include: Policy and Future Alternatives, Assessing Science and Technology, Environmental Studies for Children, Ecological Principles Simplified, Strategies for Citizen Participation, and the Function of Conservation.

Other activities of the Technical Guidance Center are work-related programs to be designed to advance competence in special areas of concern in response to the needs of professionals. A survey of in-service teachers has been conducted to prepare for the offering of courses in environmental studies appropriate to teachers' needs. In addition, workshops and symposia will focus on timely topics relevant to changes in environmental fields.

The Technical Guidance Center is located at 317 and 321 Hills North, University of Massachusetts, Amherst, Massachusetts, 01002, or phone (413) 545-0347.

## WINTERSESSION

For the past four years, the Division has supplemented the University's programming during the interim period between fall and spring semesters, a period now called Wintersession. This winter there is a wide variety of workshops and credit courses from which to choose. Please see the next two pages for a detailed description of Wintersession.





# WINTERSESSION '77

## Credit-Free

Begin January 3

## Workshops

## Credit Courses

January 3-21

Registration for Wintersession courses or workshops may not be accomplished with this Continuing Education Spring Catalog. In order to register by mail, students must obtain the Wintersession Catalog. Directions for registration are below.

### Mail-In Registration:

To register by mail, contact the Continuing Education Records and Registration Office, 545-3653, for a Wintersession Catalog. The catalog contains necessary registration information and mail-in registration forms. All mail registrations must be accompanied by full payment. Please allow for mail delays; the mail-in deadline is a December 22 postmark.

### In-Person Registration:

To register in person come to the Continuing Education Records and Registration Office, Hills House Lobby, UMass campus, Amherst. Office hours:

Monday-Thursday 8:30 a.m.-7:00 p.m.  
Friday 8:30 a.m.-5:00 p.m.  
Saturday 10:00 a.m.-1:00 p.m.  
Closed Holiday Weekends

Register early; class size is limited.

## CREDIT-FREE WORKSHOPS

Small Woodlot Management  
Identification of Trees and Shrubs  
Dry It—You'll Like It!  
Little Kid and Big Kid Terrarium and  
Bottle Garden Construction  
Williamsburg-Style Colonial Arrangements  
Seminar in Massachusetts Special Education Law  
—Chapter 766  
Theatrical Lighting  
Technical Production  
Basic Carpentry  
Managing Yourself Creatively

Beginning Modern Dance  
Developing Consulting Skills  
Sign Language and Finger Spelling  
Developing Creative Learning Games  
Making Games for Your Classroom  
A Crash Course in Basic Photography  
Basic Calligraphy  
Cartoon Art  
Print Collecting and Appreciation  
Woodcut Printing  
A Busy Person's Approach to Patchwork

*Spring Credit-Free Workshops begin on page 38. 35*





## ARTS EXTENSION SERVICE

Arts Festivals and Special Events

*Spring Arts Extension Workshops and Seminars begin on page 39.*

*For more information on the Arts Extension Service, see page 32.*

## COMMUNITIES IN ACTION

Accountability Organizing  
Setting Up Resource Systems  
Over-Simplified Accounting  
The Planning Process—Management by Objectives  
Organizing Community Dialogue  
The Politics and Economics of Human Services  
—Who The Helping Profession Helps  
Improving PR and Media Coverage for your  
Organization

Long-Range Planning  
Evaluating Community Programs  
The Written Word  
"They"—Recruiting and Placing the Volunteer  
How To Put Together A "Yellow Pages" for  
Social Change  
Producing Publications

*Spring Communities In Action Workshops begin on page 40.*

*For more information on Communities In Action, see page 32.*

## SCHOOL COMMITTEE WORKSHOPS

Workshop I Role of the Chairperson; School Committee Relationship with Superintendent  
Workshop II Fiscal Autonomy, Budgets, Finances  
Workshop III Personnel Decisions, Public Participation, Controversy  
Workshop IV Collective Bargaining and Contract Administration  
Workshop V School Committees and the State; Special Educational Help for School Committees

*For more information about Massachusetts School Committee Workshops, see ad, page 16.*

*Maria Roberts, Coordinator of the new program, may be reached at (413) 545-3430.*

## CREDIT COURSES

Basic Studio (Drawing Emphasis)/ART 104A C Core  
Basic Studio (Design Emphasis)/ART 104B C Core  
Modes of Film Communication/COMSTU 190B  
Advanced Public Speaking/COMSTU 201  
Geology and Man/GEOL 105 E Core  
Development of American Civilization, 1876 On/HIST 151 C Core  
Algebraic Review/MATH 101  
Analytic Geometry with Elementary Functions/MATH 102  
Precalculus Trigonometry/MATH 103  
Philosophical Approaches to Science/PHIL 240 E Core  
Child Behavior and Development/PSYCH 260 D Core  
Educational Psychology/PSYCH 301 D Core  
Language and Writing/RHET 100G B Core  
Conversational Spanish/SPAN 250, 251, 252, 253  
Lives in Tension: Ida Wells, Emma Goldman, and Agnes Smedley/WOST 190Q

*With written permission only:*

Elements of Forest Mensuration/FOREST 225/525

# CREDIT-FREE WORKSHOP PROGRAM

*The Credit-Free Workshop Program is a series of workshops offered by the Division of Continuing Education specifically for persons interested in expanding their skills, furthering their careers, improving their community life, or partaking of the expertise offered by others, usually experts and teachers in their fields. The workshops are for those for whom academic credit is not a priority.*

## Admissions

The Division of Continuing Education has an open admissions policy with regard to the Credit-Free Workshops it offers. Interested persons may enroll for as many workshops as they wish without concern for their educational background.

### Sixty-five and Over Policy

Persons aged 65 and over may register, free of charge, on a space-available basis, for any Credit-Free Workshop. Please call the Records Office, 545-3653, for further information.

## Mail Registration

To register by mail complete the workshop registration form included in this publication, and mail by February 4, with full payment, to:

Credit-Free Workshops, AE77-4  
Division of Continuing Education  
P.O. Box 835  
Amherst, MA 01002

Make checks payable to: Continuing Education, AE77-4. In addition to the workshop fee, all registrations must include a \$5 registration fee, charged once. **The registration fee is waived for Communities In Action Workshops.** When registration meets the minimum number, registrants will be notified immediately by mail with a class card which includes notice of the meeting place. Mail registrations must be postmarked February 4 at the latest.

## In-Person Registration

After February 4, walk-in registrations will be accepted at any time on a space-available basis. Come to the Continuing Education Records Office located in the lobby of Hills House. Office hours are:

*Monday-Thursday, 8:30 a.m.-7 p.m.*

*Friday, 8:30 a.m.-5 p.m.*

*Saturday, 10 a.m.-1 p.m. (Closed holiday weekends.)*

Enrollment in all workshops is limited to a number that is manageable and acceptable to each instructor, therefore early registration is encouraged. When requests for a workshop exceed the number to be enrolled, the Division will attempt to arrange for an additional section. Names of registrants will be placed on a waiting list in the order in which they are received.

## Fees

Credit-Free Workshops are self-funding and, in general, fees have been computed on the basis of the number of contact hours which a workshop meets. In order to make

each workshop self-supporting, a minimum number of enrollments is usually necessary. Fees are included in the workshop descriptions beginning on the next page.

## Refund and Withdrawal

Full refund will be made by mail if a workshop is cancelled due to underenrollment.

If a student wishes to withdraw from a workshop, the Records Office must be notified in writing by mail, or in person during the regular office hours. Notifying the instructor or ceasing to attend class does not constitute official withdrawal. There will be an 80% refund for official withdrawal *after* the first workshop meeting and *before* the second meeting. There will be a 60% refund after the second workshop meeting, and before the third. After the third workshop meeting, there will be no refund.

### Refund Schedule

#### After:

|                |           |
|----------------|-----------|
| First meeting  | 80%       |
| Second meeting | 60%       |
| Third meeting  | NO REFUND |

### Exceptions

There are NO REFUNDS for workshops with schedules covering less than three weeks unless withdrawal is effected prior to the beginning of the workshop. In cases of withdrawal prior to the beginning of a workshop, a full refund will be processed once the Records Office is notified in writing or in person.

## Other Important Information

### Cancellations

It sometimes becomes necessary for the Division to cancel, postpone or combine workshops or to change instructors. Changes are usually kept to a minimum.

Weather cancellations are announced over local radio stations.

### Workshop Locations

Workshops will take place in Amherst. Exact locations will be announced by mail once students have registered.

### Reading Material

Reading material information may be obtained from the instructor on the first night of the workshop. Required books may be obtained at the University Textbook Annex; for hours, see **Textbooks** in this catalog.

### Supplies/Expenses

Some workshops require supplies which are to be paid for by each participant if he or she chooses to have them. The estimated cost of these supplies is listed at the end of the workshop description. Since expense money is estimated and optional, it is not to be included in workshop and registration fees, and students should not pre-pay.

### Parking

After 6 p.m. there are no parking restrictions in *legal* parking places.



## CREDIT-FREE WORKSHOP CALENDAR

|           |                       |
|-----------|-----------------------|
|           | December 1-February 4 |
|           | After February 4      |
| Monday    | February 14           |
| Monday    | February 21           |
| Tuesday   | February 22           |
| Saturday  | March 19              |
| Monday    | March 28              |
| Monday    | April 18              |
| Wednesday | April 20              |
| Saturday  | May 7                 |

Mail Registration  
 Walk-In Registration (space-available basis)  
 Workshops begin (unless otherwise noted in the Workshop Description)  
 Holiday (*Washington's Birthday*)  
 Monday workshop schedule will be followed (Tuesday workshops do not meet)  
 Spring vacation begins after last workshop  
 Workshops resume  
 Holiday (*Patriot's Day*)  
 Monday workshop schedule will be followed (Wednesday workshops do not meet)  
 Workshops end (Workshop schedules vary—consult Workshop Description)

## WORKSHOPS

### ARTS & CRAFTS

#### Basic Calligraphy (The Art of Hand Lettering) F001

**Valerie Ashton: Freelance Calligrapher**

Concentrates on the basic italic alphabet. If there is time, advanced alphabets will be introduced. Class is small to allow as much individual attention as needed. Expenses are \$2. Ten weeks, Wednesday, 7-9 p.m., \$41.

#### Basic Drawing F002

**Jack Radetsky: M.F.A.**

Drawing affords a vehicle for both mirroring of visual phenomena and the expression of intuitive aesthetics. Projects familiarize the student with drawing dynamics, and warrant individual expressive interpretation. Workshop is not merely a laboratory for problem-solving. Charcoal, graphite and inkwash are the suggested materials. Expenses are \$10. Ten weeks, Thursday, 7-10 p.m., \$60.

#### Cartoon Art F003

**Brian Turner: Cartoonist**

Development of style and technique in graphics, and story-telling in comics and cartooning. Differences explained among political, underground, gag, parody, and strip. Includes history and recent technical/artistic developments. Use of tools, marketing, with some attention to animation and children's book illustration as requested by participants. Art equipment costs will vary according to needs of individual. Recommended readings: Hamm, *Cartooning*; Robinson, *Comics*; Steranko, *History of the Comics*, Vol. I, II. Ten weeks, Thursday, 7-10 p.m., \$60.

#### Colonial Restoration and Interior Decorating F004

**Stephen A. Olivo, Jr. and Victoria L. Olivo: Designer/Consultants**

Restoration and interior decorating with a personal emphasis. The why's, how's, and what's of recreating the look of colonial times in a workable, modern lifestyle. Field trips to homes restored by the instructors achieve a closer look at reasonably authentic and affordable restoration. Students learn the key to imaginative but simple Early American decorating, and the textures, moods, and settings of Colonial New England. Ten weeks, Thursday, 6:30-8:30 p.m., \$40.

#### Crewel and Creative Stitchery F005

**Agnes Moustakis: Certified Teacher of Needlework**

Techniques of transferring patterns and use of 20 different stitches (advanced stitches for advanced students). Color, balance, and design stressed. Application to a selected piece carried through blocking and completion. Expenses are \$8-\$20. Six weeks, Saturday, 9 a.m.-12 noon, \$36.

#### Fundamentals of Weaving F006

**Mary Canner: Fiber Artist**

Fundamentals of handweaving. A wide variety of weaving techniques explored utilizing cardboard and simple two or four harness frame looms constructed in class. Some work also done with a standard four harness loom including a full treatment of warping and dressing a loom as well as the fundamentals of drafting and draw-downs. The option of renting portable four harness floor looms is available, though not required. Emphasis on exploration of the creative possibilities of handweaving through experimentation with basic weave structures, fibers, colors, and textures. Student projects may be functional or non-functional ranging from fiber sculptures, wall hangings and tapestries to pillows, bags, and small rugs. Expenses are \$10-\$15. Ten weeks, Monday, 7-10 p.m., \$61. Please note: A follow-up workshop entitled Intermediate Weaving will be offered in the Summer Session.

#### Gravestone Rubbing F007

**Melvin G. Williams: Ph.D.**

Morning session: slide-illustrated discussion on artistic and historical attractions of New England's seventeenth- and eighteenth-century graveyards. Afternoon session: guided practice in making gravestone rubbings, using both oil and wax techniques. Expenses are \$5. Saturday, April 30th, 9 a.m.-4 p.m., \$14.

#### Painting With High-Gloss Enamels F008

**Tine Weston-Heij: Art Teacher's Degree, Holland**

Abstracting particular characteristics of a subject in terms of its contours, textures, outlines and shades rather than detail. Subject matter is composed of magazine/photo clippings with instruction on composition and means of transfer. Emphasis on active collage effect rather than still-life reproduction. Size and uses range from small scene to wall mural. This medium is especially successful for beginners and intermediates with basic painting skills. Expenses are \$5. Eight weeks, Wednesday, 7-9 p.m., \$32.

#### Patchwork: A Busy Person's Approach F009

**Victoria Olivo: Designer**

The use of patchwork in making quick, inexpensive changes in one's home and clothing in minimum amount of time. Includes patchwork quilts that can be sewn in two weeks: pillows, pot holders, samplers, and other small color spots for the home; and application of calico on clothing using recycled materials such as denim. Knowledge of sewing machine necessary. Three weeks, Tuesday, 7-9 p.m., \$12.



## Pottery F010

Frederic A. Englander: Potter

Techniques of the potter's wheel, glazes, clay chemistry and hand-building. Stoneware clay and glazes are fired in a reduction atmosphere to cone 10. Includes opportunity to fire eight pots. Additional pots may be fired for a minimal fee. Expenses are \$5. Ten weeks, Tuesday, 7:30-9:30 p.m., Saturday, 10 a.m.-12 noon, \$80.

## Print Collecting and Appreciation F011

Leslie Kramer: M.F.A., Printmaking

Designed for those who would like to collect art on a modest budget. Lecture-discussions on what to look for when buying an original print. Visits to a local museum or gallery uncover the range of artwork in this area. Topics covered include the differences between etching, lithography and serigraphy; what determines the value of an original print; and care and display. Approximately three Saturday afternoon field trips to be arranged. Recommended reading: Zigrosser, *A Guide to the Collecting and Care of Original Prints*. Ten weeks, Saturday, 10 a.m.-12 noon, \$41.

## Problems in Non-Representational Painting F012

Linda Forte: M.Ed.; Ed.D. Candidate

Designed for the student who wishes to try non-representational painting as a means of expression. Non-representational painting is analysed, discussed, and compared with representational painting. Includes how to approach the canvas, and when to stop. Some students may discover that they can best express themselves representationally and will continue to do so for the remainder of the studio experience. Expenses are \$12. Ten weeks, Wednesday, 7-9 p.m., \$41.

## Puppetry F013

Betsy Morris: M.F.A.

The art of designing and constructing both hand puppets and marionettes from readily available materials. Includes sock puppets, cloth puppets, household or found-object puppets, papier-mache and plastic wood hand puppets. Improvisational puppet theatre with emphasis on characterization through handling of the puppet and vocal technique (including dialect) of the operator; puppet stage design and playwrighting. Expenses are \$3. Ten weeks, Wednesday, 6:30-9:30 p.m., \$60.

## Upholstery F014

Walter Rupp: Upholsterer

Students learn step by step reupholstering procedure of typical piece of furniture. Demonstrations enable students to work independently. Questions and problems handled on an individual basis. Expenses are \$10. Ten weeks, Wednesday, 6:30-9:30 p.m., \$60.

## ARTS EXTENSION SEMINARS

*The Arts Extension Service is a community development program which works to meet the needs of continuing education in the arts. One objective of the AES is to help develop effective and self-sufficient community arts organizations. AES provides consulting, seminars, listings, and other programs related to the arts. This spring, among the offerings of AES are the following credit-free workshops and a new credit course advertised below.*

### How to Get Published F015

Effective marketing techniques for the writer; where first works are likely to be sold; how to sell yourself, your work; quality versus marketability. Saturday, February 12, 1977, 9 a.m.-1 p.m., \$8.

### Performing Artists and Booking Seminar F016

Concurrent sessions. For performers: how to get bookings; how to audition; available resources; the performing artist as his/her own agent. For bookers: block booking; touring programs and other resources; residencies; workshops, etc. Saturday, February 26, 9 a.m.-5 p.m., \$15 (lunch included).

### Women and the Arts F017

Aimed primarily at, but not limited to, women in arts management positions, women artists, and women seeking placement and advancement in arts organizations. Concentrates on: career development, group dynamics, leadership skills, people management, relations with board, staff, volunteers, decision-making, and communication. Saturday, March 13, 1977, 9 a.m.-5 p.m., \$15 (lunch included).

The following seminars are available to special interest groups at selected locations upon request.

*Fees for these seminars are negotiable, depending upon location and the number of participants. Registration for these seminars may not be accomplished with this catalog. For further information, contact: Coordinator of Seminars, Arts Extension Service, Box 321, Amherst, MA 01002.*

### Art as an Investment—For Banks and Businesses

Mini-seminar on the pros and cons of investing in art; the art market, the economy and their relationship; art frauds; the role of the museum, the library; who is a reputable dealer.

### Careers in the Arts—For High School Students

Presentation of career options in the arts; how one prepares for the various occupations; strong and weak points of the professions.

## Arts Extension Service presents a three credit course: ARTS MANAGEMENT, ART 290R

Arts Management is a three credit seminar-course surveying the various types of arts and cultural organizations, their needs and place in society. The course covers the following material over fifteen weeks: (1) the various arts organizations and ancillary arts service categories in related business and industry; (2) the types of positions which exist in arts administration and the skills and criteria for them; (3) the role which informed citizens can play in shaping arts organizations; (4) the future of the arts and culture in our society-state-city. The format allows for discussion of issues and interests of those enrolled. Guest speakers present views and experiences. This course does not contribute to fulfilling requirements for the major. The instructor is Caron Van Gilder, Arts Extension Service. To register, please read the general information in the front of this catalog, and use the registration form in the center fold to register by mail.



## Arts Programming in the Schools—For High School Teachers and Counselors

How to do programming on a shoestring; how to integrate arts into the curriculum and classroom; how to set up a school resource center; how to use student talent and management skills; artist residencies.

### Community Arts Day 1977 F018

Third annual meeting of people working in and concerned with community arts. Deals with a variety of management topics, idea sharing, information dissemination on latest developments in state, national and local arts policies and programs. Saturday, April 16, 1977, 9 a.m.-5 p.m., \$15 (lunch included).

## COMMUNITIES IN ACTION WORKSHOPS

*Communities In Action is a new program designed to meet some of the training needs of community organizations. This series of short, intensive and inexpensive workshops is intended for board members, staff and volunteers of citizen councils and non-profit community organizations of all types. Instructors for each of the three-hour workshops are practitioners with both theoretical knowledge and practical experience in the topic area. After spending just a few hours in the classroom, participants can return to their organizations bringing with them new skills and ideas. The registration fee for Communities In Action workshops has been waived as a service to communities and their organizations.*

*Communities In Action and other training workshops can be offered by your organization in your own community. For information, please contact Stan Rosenberg, (413) 545-3420.*

*To register, please read the general information on page 37, and fill in the registration form in the center fold of this catalog. Or register in person in the Lobby of Hills House North, UMass/Amherst.*

### Great Decisions Discussion Group F022

#### Home or group study

Participants in this eight-week program examine sensitive issues in current United States foreign policy, assess background information, evaluate diverse opinions and communicate their own informed opinions to governmental decision-makers. Topics include Southern Africa: End of White Supremacy; The Middle East Cauldron: After Lebanon, What Next?; The Spread of Deadly Weapons: Can Proliferation be Checked?; Food and Population: Was Malthus Right?; U.S.-Soviet Relations: Whatever Happened to Detente?; and others. Participants will meet in their own or neighboring communities, and will be notified about locations once registration is complete. Program booklet included in workshop fee: \$5.

## Volunteer Management Workshops

*These workshops are co-sponsored by the Division and the Springfield Action Commission, Springfield, MA, and are made possible with assistance from the National Center for Voluntary Action, Washington, DC. The workshops will be held at the Springfield Action Commission headquarters, 721 State Street, Springfield.*

*All four volunteer management workshops may be taken at a special reduced rate of \$35. Groups registering for the whole series may send a different representative to each of the workshops if they wish. Those registering for the series should use the following title and number:*

All Four Volunteer Management Workshops F023

## Aspects of Personnel Management F024

**Peggy Dreger: Executive Director, Voluntary Action Center of Greater Springfield**

Participants develop skills in managing paid or unpaid personnel. Presents and demonstrates certain management skills including listening and paraphrasing, and performance evaluation. Considers differing perspectives of a situation and the implications for job satisfaction. Explores motivators and dissatisfiers and their effect on personnel performance. Examines factors in management of specific personalities. Saturday, April 30, 1977, 9 a.m.-5 p.m., \$10.

## Board/Staff Interaction F025

**Peggy Dreger**

Provides a common experience for members of boards and staff for understanding and utilizing basic principles which promote and encourage an effective organization. Analyzes the unique roles and responsibilities in a board/staff partnership. Demonstrates techniques and materials for improved board functioning. Considers elements of board orientation. Participants in this workshop must be pre-registered board/staff teams who have read their agency By-Laws. Saturday, March 26, 1977, 9 a.m.-5 p.m., \$20 for the team.

## Paths to Organization Success F026

**Peggy Dreger**

Focuses on the process of program planning and evaluation. Participants investigate the relationships between an organization's purposes, goals and objectives; develop the capability to depict the planning process as a PERT chart; analyze factors involved in determining managerial priorities; and investigate the appropriateness of various evaluation designs and techniques for measuring progress. Saturday, February 26, 1977, 9 a.m.-5 p.m., \$10.

## Minority Group Recruitment F027

**Peggy Dreger**

Coordinators and administrators of voluntary programs consider the characteristics of minority group membership; examine reasons for involving individuals in traditional, organizational voluntarism; investigate four specific recruitment techniques; and develop and practice skills needed for interviewing and writing job descriptions. Saturday, May 21, 1977, 9 a.m.-5 p.m., \$10.

## Learn to be an Effective Leader F028

**John Beck: M.Ed.**

**Margo Willet: M.Ed.**

Each of us is a leader at times. This three-evening workshop uses case studies and life situations to explore leadership. Learn how to analyze and diagnose situations and then determine the most effective leadership styles for the situations. Learn how you behave as a leader. March 8, 9, 10, 1977, 7-10 p.m., \$15.

## Decision-Making F029

**John Beck: M.Ed.**

How do groups make decisions? What is your role in getting decisions made? Learn about different types of decisions, how to make them and when to use them. Focus on Vroom's decision-making model. April 6 and 7, 1977, 7-10 p.m., \$10.

## Effective Use of a Board in a Citizen's Organization: Who is Represented, How, by Whom, For What Purpose? F030

**Gail B. Maienza: Chairperson, Board of Directors, Franklin-Hampshire Council for Children**

**Tracey B. Noble: Community Representative (staff) for Franklin-Hampshire Council for Children**

Discussion of various board structure models—what kind of board for what kind of need; exploration of different roles a board can play; methods of determining goals and focus; identifying who a board represents and how; methods to strengthen communications between board and constituency. Saturday, March 5, 1977, 9 a.m.-12 noon, \$5.



## **Volunteerism: Building and Maintaining Membership in a Citizen Participation Organization F031**

**Gail B. Maenza:** Chairperson, Board of Directors,

**Franklin-Hampshire Council for Children**

**Tracey B. Noble:** Community Representative (staff) for  
**Franklin-Hampshire Council for Children**

Strategies, tools, and techniques useful in recruiting and sustaining active involvement of membership in a volunteer citizens group. Discussion of common problems and possible solutions regarding membership; involvement with specific examples generated from workshop participants. Saturday, March 19, 1977, 9 a.m.-12 noon, \$5.

## **Forecasting and Long-Range Planning for Citizen Groups F032**

**Duane Dale:** Ed.D. Candidate

Many current social changes are the result of planning decisions made a decade or more ago. In order to play a part in their community's future, citizens need skills in forecasting and planning. Workshop identifies a community planning case study which is of interest to class participants and uses it to demonstrate the usefulness of trend analysis, impact analysis, and simplified systems modeling, as well as brainstorming and creative problem-solving. Tuesday, April 5, 1977, 7-10 p.m., \$5.

## **Evaluating Community Programs F033**

**Norma S. Friedman:** Director of Kulturama, Inc.

Focuses on the theoretical and practical aspects of community program evaluation. Introductory workshop geared toward the volunteer or administrator who is programming in his/her community in areas such as education, recreation, or social. It is highly recommended that an individual be familiar with objective writing. Evaluation techniques are discussed with emphasis on theory, rather than the specifics of each technique. Emphasis on the idea of evaluation as a continuous process with suggestions, exercises, discussion, and bibliography. Thursday, February 24, 1977, 7-10 p.m., \$5.

## **Finding the Real Issues: Motivating Citizen Involvement F034**

**Duane Dale:** Specialist, Citizen Involvement Training Project

Methods for motivating citizen involvement by tapping people's real concerns. Hands-on experience with informal surveys, discussion groups, Simon's "values clarification" techniques, and Freire's "generative themes". Participant evaluation of the usefulness of these techniques; tips on designing programs using the findings. Tuesday, April 12, 1977, 7-10 p.m., \$5.

## **Deciding What To Ask For—And How To Get It F035**

**Duane Dale**

Citizen groups find themselves asking for a lot—from basic information to policy changes. We could take a lesson from Roger Fisher's guidelines for international diplomacy: "Think about their decision" and "Give them a yes-able proposition". We'll try these ideas with class participants' issues, giving special attention to the questions: "How can we turn a utopian vision into a yes-able proposition?" "Who should we ask?" and "How much could we do ourselves?" Tuesday, April 19, 1977, 7-10 p.m., \$5.

## **A Look at the "isms": Capitalism, Socialism, Facism F036**

**Michael T. Gibbons**

Underlying assumptions about human nature and society are explored in relation to Capitalism, Socialism, and Facism, as well as the opportunities for human and social development for the future. Asks questions: Will Capitalism survive or are we on the road to a form of either Socialism or Facism? Tuesday, March 1, 8, 15, 1977, 7-10 p.m., \$15.

## **Improving PR and Media Coverage of Your Organization F037**

**Robbie Gordon:** M.F.A.; Free-lance writer; journalist; graphic artist

Focuses on how to write press releases so the press won't bury your story; how to create interest in your group; quick, inexpensive and effective methods of publicity (including promotional campaigns, leaflets and newsletters, and the utilization of free public-access media forums). Major thrust on the nuts-and-bolts of publicity and

on viewing your organization from the press's perspective. Wednesday, February 16, 1977, 7-10 p.m., \$5.

## **Production of Publications F038**

**Lorraine Bogartz:** Coordinator, Continuing Education  
**Bulletins**

**Robbie Gordon**

Presents skills useful in producing publications for the purposes of informing a target audience and communicating with some precision both verbally and graphically. Includes preparation of copy, design and layout, and working with printers. Some focus on how to save money, and how to get the job done without getting bogged down in details such as color choices, use of graphics, expensive camera work or impossible deadlines. Wednesday, February 23, 1977, 7-10 p.m., \$5.

## **The Written Word F039**

**Robert Lynch:** Consultant, Arts Extension Service

Participatory workshop for those who have difficulty writing for organizational purposes; includes "how-to's" of letter-writing, press releases, proposals, brochures, and reports. Critique method employed. Participants are urged to bring samples of their work. Wednesday, March 2, 1977, 7-10 p.m., \$5.

## **Accountability Organizing—How To Do It F040**

**Greg L. Speeter:** Community Organizer; "Children's Campaign '74"

Describes a method of holding selected officials accountable to the stated concerns of a constituency. Based on the success and failures of the "Children's Campaign, '74." The workshop process includes: building a "citizen's platform" (through public hearings and community organization techniques); determining candidate commitment to the platform; developing a report card for the candidate's responses to the platform; and methods of holding the elected candidates accountable to their commitments through group pressure. Monday, March 7, 1977, 7-10 p.m., \$5.

## **Who the Helping Profession Helps—The Politics and Economics of Human Services F041**

**Greg L. Speeter:** Community Representative, Holyoke/  
**Chicopee Council for Children**

Lecture/discussion of the roles and functions of various human service agencies, their effect or lack of effect on "clients," providers, politicians and corporate leaders; and alternative methods of providing services or preventing social problems so that rehabilitation services are not needed. Monday, March 14, 1977, 7-10 p.m., \$5.

## **How To Put Together a "Yellow Pages" for Social Change F042**

**Greg L. Speeter and Robbie Gordon**

A group of citizens assembled a "Children's Yellow Pages", an easy-to-read 102-page analysis of children's problems, listing of resources and plans for citizen involvement to prevent children's problems. Workshop describes how to assemble a yellow pages on any topic and how to mobilize a community around various problems. Includes developing a constituency, data gathering, issue building, organization of the manual, layout and graphics, distribution, methods of utilizing constituency in action organizing. Monday, March 28, 1977, 7-10 p.m., \$5.

## **The Planning Process: Management by Objectives F043**

**Donna J. Stephenson:** Consultant, Arts Extension Service, Division of Continuing Education

Using a results-oriented system, develops a working understanding of the fundamentals of objectives; what they are and why we care about them. Participants learn to articulate objectives which reflect the purpose of an organization. These objectives can be used for planning or re-defining programs and evaluating program progress. It is recommended that this workshop be taken in conjunction with the Long-Range Planning and Evaluation Workshops. Monday, February 14, 1977, 7-10 p.m., \$5.

## **Organizing Community Dialogue F044**

**Stan Rosenberg and Lin Riggio:** Coordinators, Great  
**Decisions Program, Division of Continuing Education**

Using the Great Decisions Program as a model, workshop focuses on



developing skills required to launch a community discussion program. Subjects include choosing the material, identifying constituencies and potential participants, marketing the program, organizing the discussion environment, collaboration among community organizations and facilitating discussion. Participants can expect to learn skills that are applicable to types of community efforts other than discussion programs. Saturday, March 12, 1977, 9 a.m.-12 noon, \$5.

#### **Setting Up Resource Systems F045**

**Robert L. Lynch: Consultant, Arts Extension Service, Division of Continuing Education**

In every type of social art or other service situation, effective services can be rendered only after an effective resource and information system has been developed. This workshop explores, through round table discussion, types of resource systems, pros and cons of resource tools, creating a self-sustaining, inexpensive information flow and methods of gathering, keeping, updating and distributing information. Legal ramifications, competition and individual problems are included. Thursday, March 17, 1977, 7-10 p.m., \$5.

#### **Oversimplified Accounting (Or All You Can Learn About Accounting in a Three Hour Course) F046**

**Caron H. Van Gilder: M.A., Arts Administration; Consultant, Arts Extension Service, Division of Continuing Education**

A microcosmic accounting workshop for small organizations. Simplified budgeting, setting up income and expense accounts, an overview of bookkeeping, financial reporting and how to control budgets. For organizations with budgets of \$10,000 to \$200,000. Tuesday, February 15, 1977, 7-10 p.m., \$5.

#### **"They"—Recruiting and Placing the Volunteer F047**

**Donna J. Stephenson**

Using discussion and role play as a base, participants examine the process of recruitment including interviewing skills. Workshop addresses the skills necessary to resolve problems. Monday, February 28, 1977, 7-10 p.m., \$5.

## **DANCE/MOVEMENT**

#### **Ballet: Beginning F048**

**Ellen Inkellis: University Dancer**

Designed for the interested person who has had little or no dance experience but lots of enthusiasm. Depending on the level of students, offers the basics of ballet at a speed that will be comfortable for all students, yet will prepare students to go on in ballet if they wish. Ten weeks, Tuesday and Thursday, 6:30-8 p.m., \$60.

#### **Ballet: Intermediate F049**

**Ellen Patton: University Dancer**

Designed for persons who have had Beginning Ballet training, and would enjoy moving on to a higher level of ballet technique. Attendance is stressed. Ten weeks, Tuesday and Thursday, 7-8:30 p.m., \$60.

#### **Creative Movement F050**

**Deborah Waldron: BDIC in Muscular Rehabilitation and Dance**

Guides the student into intelligent and sensual appreciation of the human body in motion. Utilizes movement techniques from ballet, modern, and jazz dance; familiarizes the student with the structural, functional, and physiological aspects of the movement of the human body. Begins with a structured technical warm-up designed to stretch, relax, tone-up, and rehabilitate specific muscle groups and evolves into a non-traditional unstructured pot-pourri of improvisation, dance therapy, relaxation exercises, and Esalen massage. Consistent attendance is encouraged. Wednesday, 7-9 p.m., \$41.

#### **Dance Exercise F051**

**Ellen Inkellis: University Dancer**

Designed for the individual who seeks a less structured environment than a dance class; emphasis on dance as a form of exercise rather than a performing art. All kinds of exercises are offered for different students' needs; an example of these would be exercises of a cor-

rective nature and tension-relieving exercises. Requires enthusiasm and enjoyment of getting and staying in shape. Ten weeks, Tuesday and Thursday, 8-9:30 p.m., \$60.

#### **Hatha Yoga F052**

**Adele Mack: Student and Teacher for eleven years**

Based on premise that health is discipline. Explores Hatha Yoga asanas and pranayama; relaxation at will; develops greater powers of concentration through "centering"; and proper diet and its application to our individual lives. Expenses are \$10-\$12. Recommended readings: Stearn, *Yoga, Youth and Reincarnation*; Swami Vishnu, *The Complete Illustrated Book of Yoga*. Section 1: Ten weeks, Monday, 6-7:30 p.m., \$31. Section 2: Ten weeks, Wednesday, 6-7:30 p.m., \$31.

#### **Modern Dance: Intermediate F053**

**Donna Potter: University Dancer**

Exploration into modern dance techniques, using a modern warm-up and incorporating music more intensely into exercises. Emphasis on refining movements and developing self-discipline and body control. Strict attendance encouraged. Previous dance experience required. Ten weeks, Monday and Wednesday, 7-8:30 p.m., \$60.

#### **Tap Dancing: Beginning F054**

**Janny Densmore: B.F.A.; Dancer**

Get the lead out of your feet! This class is for folks who have had little or no tap-dancing experience. No special talents are necessary because anyone who WANTS to can learn to tap. Begins with basic steps of tap, combining the steps into routines. Emphasis on moving in rhythm to musical selections from the 30's and 40's. Class is open to all; be prepared for vigorous fun. Expenses are \$3-\$10. Ten weeks, Wednesday, 6-8 p.m., \$40.

## **EAST WEST INTEGRAL STUDIES**

*The East West Integral Studies Program is a group of workshops designed to be a means of sharing knowledge and skills with one another. Presented in Amherst by the Division of Continuing Education in association with the East West Foundation, located in Boston, the Integral Studies Program covers a broad range of subjects from both East and West, including practical study and experience, along with the underlying principles and theory. It is our hope that the Integral Studies Program will help provide the understanding and practical means for the creation of health, happiness, and freedom through the development of a wholistic view of life.*

#### **Acupuncture Massage F055**

**Ken Burns: East West Foundation**

Acupuncture (Shiatsu, or finger pressure) massage, unlike Swedish massage, aims at treating illness or imbalance within the body by re-adjusting the flow of ki or life energy along the acupuncture points and meridians. Requires no specialized knowledge or instruments, and has been commonly practiced in the Orient for thousands of years. Workshop covers basic oriental methods of diagnosis and how to locate important points. Students learn to give a complete massage. Recommended readings: Michio Kushi, *Acupuncture and Ancient and Future Worlds*; George Ohsawa, *Acupuncture and the Philosophy of the Far East*; Ilza Vieth, *The Yellow Emperor's Classic of Internal Medicine*. Eight weeks, Wednesday, 6:30-9:30 p.m., \$50.

#### **The Art of Natural Macrobiotic Cooking F056**

**Diane Avoli: East West Foundation**

The practice of macrobiotic cooking reflects that health, spirituality and happiness depend on the quality of blood, and that is in turn determined by daily food. Introduces preparation of whole, natural foods. Emphasis on the balance of yin and yang in everyday eating, from season to season and for individual needs. Instructor demonstrates the use of basic, traditional foods in grain, bean/vegetable, soup, bread and dessert dishes for varied, delicious everyday meals.

Recommended readings: Abehsera, *Cooking for Life*; Farmilant, *Macrobiotic Cooking*; Ohsawa, *The Art of Just Cooking*; Teeguarden, *Freedom Through Cooking*. Eight weeks, Saturday, 10 a.m.-1 p.m., \$50.

### **Herbal Medicine: Wild Foods F057**

**Ken Burns**

Examines the sources of learning about herbs available in this area. In addition to field and forest, discusses written materials, and botanical reserves such as the Arnold Arboretum and the Garden of the Woods of the New England Wild Flower Society. Herbs most prominent locally are studied in detail regarding physical characteristics, season of flowering, favored terrain, and traditional uses. The Chinese Element Theory is applied to these herbs. Includes brief survey of American, European, Russian, Chinese and Japanese Herbal Folk medicines. Discusses healing on the cosmological level, using the Chinese concept: *man and earth not two*. Eight weeks, Thursday, 6:30-9:30 p.m., \$50.

### **Miso, Tamari, Seaweeds and the Foods of the Future F058**

**Bill Tims: East West Foundation**

In-depth study of foods that have formed a basis for the diets of traditional peoples for thousands of years. Includes history, processing, nutrition and future implications of these and other foods in relation to the quality of life for humankind on the planet Earth. Eight weeks, Saturday, 1-4 p.m., \$50.

## **FOREIGN LANGUAGES: CONVERSATION**

*The following language workshops concentrate on the functional and basic aspects of speaking a foreign language. All are guided by one basic rule: to develop a practical working knowledge of a language, with a view toward getting along in the country of its use. To this end, the fundamental necessities are emphasized, including manners, customs, travel, hotels, and common phrases and expressions. The grammar presented is elementary. No previous knowledge of the language is required, though those with some are also welcome.*

### **Conversational English for Foreign Students F059**

**Peter Zandan: M.A. in teaching English as a second language**

Designed for non-native English speakers to improve their English proficiency. Instruction helps students work on areas that trouble them the most. Concentrates primarily on speaking and basic writing skills. This workshop is not intensive or intended as an ESL course. Required reading: Kettering, *Developing Communicative Competence: Interaction Activities in English as a Second Language*. Ten weeks, Wednesday, 6:30-8:30 p.m., \$42.

### **Conversational French F060**

**Elise Mullen**

Intensive workshop designed for travelers to French-speaking countries. Ten weeks, Wednesday, 7-9 p.m., \$42.

### **Getting Along in German F061**

**George Vaught: Ph.D. Candidate**

Designed for those who want to learn enough conversational German to get along in a German-speaking country. Those with some knowledge of German also welcome. Deals primarily with spoken German, with phrases and expressions needed to feel at home in another country. Presented with a minimum of grammar. Most of the work is done in class, not at home. Learn to stay in a "Gasthaus" not a hotel. Ten weeks, Wednesday, 6:30-8:30 p.m., \$43.

### **Conversational Italian F062**

**Alessandro Massaro**

Intensive workshop for travelers to Italy. Required reading: Hall and Bartoli, *Conversational Italian*. Ten weeks, Wednesday, 7-9 p.m., \$40.

### **Conversational Spanish F063**

**Paul Erba**

Designed for those who want to learn to read and to understand the language basics. Ten weeks, Monday, 7-9 p.m., \$43.

### **Greek for the Traveler F064**

**Ilene Photos**

Presents basic phrases and expressions needed for travel; discussions on cross-cultural differences. Recommended reading: *Blue Guide for Greece*. Ten weeks, Tuesday, 7-9 p.m., \$41.

## **INSTRUMENTAL MUSIC**

### **Basic Jazz-Rock Guitar F065**

**Vincent Mitchell**

Includes suggested list, guitar care, tuning, plectrum technique, note reading, basic chords, position scales, 12-bar progressions, riff-writing, improvising, rhythm chords, lead chords, arrangement, and listening. Songs from standard and popular repertoire. Guitar player magazine articles. Access to guitar necessary. Recommended reading: Leavitt, *A Modern Method for Guitar*. Ten weeks, Wednesday, 7-9 p.m., \$42.

### **Fiddle/Violin Workshop F066**

**Yosef Oxenhandler**

European and American fiddle playing aimed at beginning and intermediate players. A "play by ear" approach to Irish, Bluegrass, Gypsy, and early music. Emphasis on tone production, intonation and bowing. Patience and a playable instrument only prerequisites. Ten weeks, Tuesday, 7-9 p.m., \$41.

### **Folk Guitar Finger Style: Basic F067**

**Vincent Mitchell: Guitarist**

Guitar care, tuning, picking technique, notereading, basic chording, basic guitar theory, tablature, back-up picking, capo, picking styles, one private lesson, listening session, and song swap. Songs traditional and by Woodie Guthrie, Tom Paxton, Leonard Cohen, Paul Simon. "Sing Out!" magazine articles. Access to guitar necessary. Ten weeks, Monday, 7-9 p.m., \$42.

### **Instrumental Folk-Rag Guitar: Intermediate F068**

**Vincent Mitchell**

Delves into fingerpicking arrangements of folk and ragtime songs for guitar: John Hurt, Fahey, Scott Joplin, and others. Includes music reading review, theory, guitar chording system, back-up picking, position scales, listening, playing and basic transcription. Students must know how to read music for guitar, and be familiar with basic chording. Ten weeks, Tuesday, 7-9 p.m., \$42.

## **LANGUAGE, LITERATURE & WRITING**

### **Persuasive Writing Workshop F069**

**Leah B. Glasser: M.A., English; Ph.D. Candidate**

Develops the skill of writing argumentative and expository essays and articles, generally in magazine format, in a manner that will appeal to a large audience. Central aim: for each writer to develop a persuasive personal voice (as in oral conversation) in expressing a given point of view. Experimentation with many techniques in argumentative writing. Group becomes "editorial board" and in process of reading and commenting on work of fellow students, each participant learns to apply new critical insight to his/her work. A chance to learn how to reach and possibly convince a large audience as well as an opportunity to discover what you really feel about the subject through writing. Suggested reading in various magazines. Ten weeks, Monday, 7-9 p.m., \$43.

### **Reading/Writing The New Gothic F070**

**M. Candice Ward: M.F.A.; Author**

Analyzes the latest type of gothic literature to emerge, i.e. gothics in which the "heroine" is an independent adult, complete with sense of humor and interested in more than "getting human." Compares these new novels to those of the traditional "forerunners-gothic" genre and discusses what effects the women's movement may have had



on the genre. Identifies the "formula" used in the writing of these novels so that students may emerge with some ability to write for fun and profit in a market that is wide open to new talent. Both practical and literary. Up-to-date publishing information offered to students. Recommended readings: Bronte, *Jane Eyre*; Bronte, *Wuthering Heights*; DuMaurier, *Rebecca*. Required readings: Hargrave, *Clara Reeves*; Butler, *Sarston Place*; one book by Glen-da Carrington. Ten weeks, Tuesday, 7-10 p.m., \$60.

#### **Sign Language and Finger Spelling: Beginning F071**

**Stanley Patrie: Teacher of the Deaf**

Manual communication as used by most deaf people in this country. Includes a brief history of the use of the language of signs, background information on deafness and how it affects those who have been born deaf or lost their hearing later in life. Students converse with totally deaf people, including the instructor, who is also deaf. Required text: Lottie Riekehot, *Talk to the Deaf*. Ten weeks, Monday, 7-9 p.m., \$40.

#### **Sign Language and Finger Spelling: Advanced F072**

**Stanley Patrie**

Helps the student become more fluent in both expressive and receptive sign language. Introduces what is known as AMESLAM, a contraction of "American Sign Language," in which facial expression and a certain amount of "body English" play an important part. Expenses are \$5-\$6. Ten weeks, Tuesday, 7-9 p.m., \$40.

#### **Spanish-English Translation F073**

**Maria-Lydia Spinelli: Graduate Student**

Rather fluent knowledge of both languages required. Very relaxed—learn at your own pace. Includes: business, political, medical, legal terminology and anything else you may want to translate. Required reading: a good bilingual dictionary. Recommended readings: Webster Collegiate Dictionary; good Spanish dictionary. Ten weeks, Wednesday, 7-9 p.m., \$41.

#### **Writing for Magazines: How to Earn a Living by Freelance**

**Writing F074**

**Steve Berman: Writer**

Covers entire process of selling, including subtleties of the various writer's markets—everything from *Harpers* and *Atlantic* to the mystery pulp magazines: getting ideas for stories, selling the idea to an editor and the actual writing of the piece. Workshop is for serious students and includes individual sessions with instructor. Ten weeks, Monday, 6:30-9:30 p.m., \$80.

#### **Writing for Self-Enrichment F075**

**Nancy Lee Thayer: M.A., Publications**

Explores the possibilities for personal self-discovery and self-therapy through reading and writing, with minor emphasis on writing commercially. Students study and write diaries, letters, short stories, poetry, and non-fiction and participate in many exercises for "finding what's in there" and "getting it out." Ten weeks, Saturday, 9 a.m.-12 noon, \$61.

#### **Writing For Life F076**

**Pat Schneider: M.F.A. Candidate; author**

Encourages and helps persons who need to write to do so as easily as they talk. Explores fears and blocks to writing. Students submit samples of their writing, which may be sections of term papers, personal letters, or imaginative work. Class time is used in discussion and encouraging suggestion for improvement. Students are asked to keep a personal journal which may be shared with the teacher at the end of the workshop. Ten weeks, Thursday, 7:30-10 p.m., \$51.

## **OUTDOORS**

#### **Hang Gliding: Basic Pilot Training F077**

**Michael Morrissey and Charles LaVersa: Glider Sports International Approved Instructors**

Basic pilot (ground and flight) training for foot-launched ultralight aircraft. Includes history and development of foot-launched aviation; aerodynamics; micrometeorology for the glider pilot; safety; maintenance; and actual flight experience. Three classroom sessions of three hours each and two flight sessions of two hours each. On-the-hill flight sessions scheduled at the students' convenience and before the end of the semester. All equipment is furnished. GSI insurance at \$17.50/student is a required expense

and payable to instructors at the first meeting. Recommended reading: Pagen, *Hang Gliding and Flying Conditions*; Poynter, *Hang Gliding: the Basic Handbook of Skysurfing*. Three weeks, Wednesday, 7-10 p.m., \$90.

#### **Technical Rock Climbing: Introduction F078**

**Jock Cochran**

Introduction to technical rock climbing takes place during one classroom session and two full days on the cliff. Indoor work includes knot-tying, belaying and safety system instruction as well as transportation arrangements and general preparation for the week-end. Climbing instruction at Chapel Ledges in South Ashfield develops climbing ability through the demonstration and practice of various techniques: jam, counterforce and friction, climbing various routes, and belaying and rappelling. For anyone 9 years or older; anyone under 16 years must be accompanied by an adult. Hiking or work boots are needed along with transportation and a bag lunch. Dress for weather, rain or shine. Recommended readings: Robbins, *Basic Rockcraft*. Classroom, Thursday, April 14, 1977, 7-10 p.m., UMass campus. Climbing instruction, April 16 and 17, 1977, 9 a.m.-4 p.m., South Ashfield, MA., \$40.

#### **Technical Rock Climbing: Intermediate F079**

**Jock Cochran**

Introduction to rock climbing with more specialized techniques: face climbing, crack climbing, layback and introduction to nut placement. Emphasis on actual climbing. Reviews belaying techniques, climbing calls and safety systems. Designed for those who have had introductory rock climbing course or experience. Recommended readings: Robbins, *Basic Rockcraft* and *Advanced Rockcraft*. Classroom, Thursday, April 28, 1977, 7-10 p.m., UMass campus. Climbing instruction, April 30 and May 1, 1977, 9 a.m.-4 p.m., South Ashfield, MA., \$40.

#### **Tennis: Beginning F080**

**Steven M. Rosenthal**

Provides fundamentals of stroke dynamics—balance, coordination, and rhythm. Covers forehand, backhand, and serve. Discusses rules of the game, scoring, and beginners strategy. Open to anyone with a desire to learn and the motivation to practice. Bring a racket, a can of balls, and wear sneakers. Six weeks, Monday and Wednesday, 4:30-6 p.m., \$25. Begins April 11, 1977.

#### **Tennis: Intermediate F081**

**Steven M. Rosenthal**

For those tennis students who can already hit groundstrokes with some consistency. Reviews rudiments of forehand and backhand, and covers techniques to achieve more powerful and accurate strokes. Introduces correct execution and use of the serve and the volley. Discusses match play, and how to buy tennis equipment. Please wear sneakers and bring a can of balls. Classes meet outdoors. Six weeks, Monday and Wednesday, 3-4:30 p.m., \$25. Begins April 11, 1977.

## **PERSONAL GROWTH**

#### **Career Decision-Making F082**

**Garrett McAuliffe: M.S.; Ed.S. in Counseling and Student Personnel Services**

Six-session workshop helps students become more aware of the career decision-making process. Explores values, abilities and interests in order to have a sound basis for career planning. Six weeks, Wednesday, 7-9 p.m., \$25. Workshop fee for students currently enrolled in either credit or credit-free continuing education courses or workshops is only the \$5 registration fee. Begins March 2, 1977.

#### **Conflict Resolution F083**

**Jack J. Rosenblum: J.D.; Ed.D. Candidate**

Skills dealing with conflict in creative and nourishing ways. Explores intra- and inter-personal conflicts and develops strategies to resolve them in a way that creates bonds and trust rather than resentment or suspicion. Uses role-play, guided fantasy, structured experiences and feedback; includes inevitable personal conflicts and attempts to resolve them. Learn to enjoy and bask in the warm glow that comes from having resolved a conflict successfully. Recommended reading: George Bach, *Creative Aggression*. Eight weeks, Tuesday, 7:30-9:30 p.m., \$65.



## **Creative Analysis—An Introduction F084**

**Penny Horowitz: M.A.T., History; Ed.D. Candidate**

Creative Analysis uses words to solve problems. Students become acquainted with principles of thinking as they relate to language usage and have the opportunity to practice various problem-solving techniques such as qualification, classification and analogy. These and others are studied and then put together to create a general approach to solving problems of all kinds. Recommended reading: Samson and Upton, *Creative Analysis*. Ten weeks, Thursday, 7:30-10 p.m., \$51.

## **Dreams and Dream Interpretation—A Jungian Approach F085**

**Steven Bengis: Counselor and Therapist**

Introduces basics of Jungian depth psychology. In addition to exploring basic theory, discusses the analysis of dreams using dream examples. Non-experiential workshop, but students will be asked to keep a dream journal for their own use. Recommended reading: Whitmont, *A Symbolic Quest*. Expenses are \$4. Ten weeks, Monday, 7:30-9:30 p.m., \$40.

## **Improving Interpersonal Relationships F086**

**Susan Lehtinen: Ph.D., Psychology**

Basic notions concerning the development of satisfying interpersonal relationships. Focuses on applying these notions to each participant's everyday life. Participants have the opportunity to explore and train themselves in new and different ways of relating to others through discussion, role-plays, structured exercises, etc. Emphasis on active participation. Issues examined include trust, conflict, peak experiences, grief and loss. Recommended readings: Alberti and Emmons, *Your Perfect Right*; Gordon, *Parent Effectiveness Training*; Kubler-Ross, *On Death and Dying*; and Rogers, *On Becoming a Person*. Ten weeks, Wednesday, 7-9:30 p.m., \$51.

## **Self-Defeat and Self-Realization F087**

**John Barbaro: M.Ed.; Ed.D. Candidate**

Self-defeating behaviors are those habits and personal patterns of living that impede the achievement of one's goals. Workshop systematically isolates those behaviors and their different aspects. Underlying motives are outlined and workable alternatives are discussed. Recommended readings: A. Lakein, *How to Get Control of Time and Your Life*; M. Schiffman, *Gestalt Self Therapy*; S.J. Warner, *Self-Realization and Self-Defeat*. Ten weeks, Tuesday, 7-9:30 p.m., \$42.

## **Siddha Yoga/Meditation: Based on the Teachings of Swami**

**Muktananda Paramahansa F088**

**Marcel Ringawa: student of Muktananda**

Introduces the tradition of Siddha Yoga and develops the seed of meditation. To a siddha yogi the worldly is the spiritual and the spiritual is the worldly. It is meant to be practiced under ordinary conditions of day to day existence. Swami Muktananda Paramahansa is a Siddha who has realized union with the Inner Self. During the last six years, Swami Muktananda has brought the tradition of Siddha Yoga to the West. Through class sharing and meditative practice, the workshop covers the areas of Siddha Yoga philosophy, meditation, chanting, mantra, Chakra centers, Kundalini. Required reading: Muktananda, *Play of Consciousness*. Nine weeks, Tuesday, 7-9 p.m., \$39.

## **The Tarot: An Introduction to its Psychology and Symbolism F089**

**Paul Zelley: M.Div.; M.A.**

Basic techniques of meditation using the archetypal Tarot card symbols. The Tarot trumps may be viewed as keys that unlock an individual's personal unconscious to lead to a greater awareness of the spiritual or higher self. Detailed analysis of the Tarot symbols and their relationship to everyday life. Discussions consist of a history of the Tarot, modern profane practices, such as fortune telling, and current misconceptions. Students make Tarot cards. Expenses are \$3.50 for cards. Ten weeks, Tuesday, 7-9 p.m., \$40.

# **PHOTOGRAPHY**

## **Darkroom Procedures: Introduction F090**

**Carol Reck: Photographer**

Learn to make your own photographic images. An introduction to

the basic techniques of black and white film developing, contact printing and enlarging. Covers selection of films, papers and chemicals, archival processing, and presentation of the finished print. Demonstrations, discussion and student participation in the darkroom are integral parts of the course. Each student should have access to a camera. For beginners. Limited to 5. Expenses are \$10-\$15. Ten weeks, Wednesday, 7:30-10 p.m., \$78.

## **Photography: Basic F091**

**Richard Barrell**

Familiarizes students with the basics of photography, cameras, lenses, filters, films and photographic materials. Work of famous photographers and films will augment lectures. No darkroom work will be required. The idea is to help you realize your ideas and pictures in slides or prints. Expenses are \$5-\$20. Recommended readings: Adams, *Camera and Lens*; Eastman Kodak, *Basic Developing, Printing and Enlarging*; *The Daybooks of Edward Weston*. Ten weeks, Wednesday, 7-9 p.m., \$40.

## **Photography: Intermediate F092**

**Carol Reck: Photographer**

For photographers with previous darkroom experience. Explores the possibilities of 35mm equipment, and techniques of photographic processing and printing to make more expressive photographs. Darkroom demonstrations and student work are supplemented by slide presentations and discussion of work of major photographers. Expenses are \$5-\$15. Recommended readings: Adams, *The Negative and The Print*; Newhall, *History of Photography*. Ten weeks, Thursday, 7:30-10 p.m., \$78.

## **Photography for Artists and Craftspersons F093**

**D. John McCarthy: Photographer**

Provides specific theoretical and practical information on the specialized field of art-object photography. Basic principles of photography are covered and then adapted to art-object photography through slide illustrated lectures, demonstrations, and outside assignments. Upon the completion of the course the student should have a photographic portfolio of his/her art work and a sound understanding of the basic principles of photography and how to apply them in any kind of photography he/she may be called upon to do. Expenses are \$10. Ten weeks, Tuesday, 7-10 p.m., \$60.

## **35mm Camera Workshop F095**

**D. John McCarthy**

Fundamental photographic theory and how to apply to 35mm photography. Lectures and demonstrations on exposure, light, lenses, composition, color, etc. Weekly assignments on practical application. The student will turn in one roll of exposed black and white film each week to be developed and made into slides by the University Photo Center. The slides are critiqued at the beginning of class the following week and the original negatives are returned unharmed. Getting the most out of professional photo finishers is covered, as well as the care of film, prints, and slides. Students must have access to a 35mm camera and should have some knowledge of basic photography. Expenses are \$10-\$15. Ten weeks, Monday, 7-10 p.m., \$60.

# **PLANT CARE**

## **The Care and Feeding of Houseplants: Plant Parenthood F096**

**Susan J. Roy: Arborist**

Basic horticultural practices are brought to bear in the ongoing care of a typical collection of houseplants. Includes: a short history of the adaptation of plants to the house; a discussion of the environmental and chemical influences which affect the health of plants under the special conditions of an average home; basic discussion of houseplant pathology, entomology and remedies. Construction of a simple terrarium. Expenses are \$5-\$15. Ten weeks, Wednesday, 7:30-9:30 p.m., \$41.

## **From the Ground Up: Landscaping and Grounds Maintenance for the Homeowner F097**

**Susan J. Roy: B.S., Plant and Soil Sciences; Arborist**

Basic horticultural principles in solving common problems that arise when landscaping. Discussion include selection and care of trees and shrubs, lawns, ground covers and mulches, maintenance of plant material, fertilizer and pesticide use, basic pathology and entomology.

Special emphasis will be on low-maintenance plantings and cultural methods. Not intended as a highly technical course for a practicing landscaper. Includes related topics, such as the physiology of roots, plant growth tendencies and the properties of soil. Ten weeks, Monday, 7:30-9:30 p.m., \$41.

#### **Terrarium and Bottle Garden Construction F098**

**Susan Roy**

Both adults and children are invited to bring their plants and containers for a workshop on the mini-environment—planting technique, and after-care of the terrarium. Some sand painting will be demonstrated. Planting done in a bottle will be shown. Saturday, April 30, 1977, 9-11 a.m., \$4.

#### **Williamsburg-Style Colonial Arrangements: How to Collect and Preserve Local Herbs and Plants F099**

**Susan Roy: Horticulturalist and Floral Designer**

Discusses native herbs and weeds suitable for collecting and drying. Particular harvest times and best drying methods are included, along with a look at the best garden flowers to grow for dried arrangements. Students design and complete a dried arrangement. Materials will be provided and are included in the workshop fee. Bring scissors, wire-cutters, florist tape and wire. Expenses are \$3-\$7. Saturday, May 7, 1977, 9 a.m.-12 noon, \$17.

## **COMMUNITY THEATER**

#### **Acting Workshop I F100**

**Gretchen L. Eisenhaure: B.A., Theater**

Emphasizes the importance of the actor in theater and the awareness of his/her body while on stage. Improvisational work, yoga, isolation and mime exercises, and scene work. Ten weeks, Wednesday, 7-9 p.m., \$40.

#### **Problems in Technical Theater F101**

**Fritz Farrington: Master Carpenter, F.A.C.**

Special problems in technical construction with emphasis on properties construction. Designed for the student with specific problems in mind. Expenses are \$10. Ten weeks, Tuesday, 8-10 p.m., \$40.

#### **Technical Production F102**

**Lewis E. Louraine, Jr.: Stage Manager, Fine Arts Center**

**Michael Van Dyke: Assistant Technical Director, Amherst College**

An overview of the technical aspects of theater from reading the play through design and construction to striking the show. Discussion and demonstration of skills and techniques. Sources of materials and information on how to locate and cajole theatrical supplies. Ten weeks, Monday, 7:30-10 p.m., \$51.

#### **Theatrical Lighting: Basic F103**

**James MacRostie: Production Stage Manager, Fine Arts Center and Lewis E. Louraine, Jr.**

Fundamentals of theatrical lighting: how to develop a light plot, hang, circuit, focus and gel the lights. Includes types of dimmer systems and lighting equipment. Ten weeks, Tuesday, 7-10 p.m., \$60.

#### **Theatrical Lighting: Advanced F104**

**James MacRostie and Lewis E. Louraine**

Theory of lighting, lighting instruments, electricity and color. Lecture and demonstration. Ten weeks, Thursday, 7-10 p.m., \$60.

## **...AND MORE**

#### **Animal Management for the Self-Sufficient Farm or Homestead F105**

**Edward T. Kingsbury: Ph.D.**

A brief description of livestock and poultry management directed toward the needs of the self-sufficient and small scale farmer. All classes of livestock and poultry are considered with emphasis on species of particular interest to the class. Topics for each species include: animal selection, feeding, health care, breeding, and the

raising of young animals. Special attention is directed toward the interrelationships between different farm animals and how they can be combined for maximum efficiency. General farm management as it relates to animal agriculture is considered throughout the presentation. If there is sufficient interest, a one-day tour will be arranged. Ten weeks, Wednesday, 7-10 p.m., \$60.

#### **Astrology: Introduction F106**

**John Penn: Physicist**

A general introduction to the theory and practice of astrology. Topics include chart erection and interpretation, relative to signs, houses, planets and their aspects. Attention given to the physics, as well as the metaphysics of astrology. Ten weeks, Thursday, 7:30-8:30 p.m., \$20.

#### **Auto Mechanics: Basic F107**

**Robert Coven: Mechanic**

A complete basic workshop, assuming little or no knowledge of the automobile. A new unique philosophical approach simplifies automobiles, and allows students to perform any mechanical operation on their own cars. Money-saving tips on purchasing parts, good driving habits, correct engine tuning, diagnosing without sophisticated equipment, and minimal tool purchase requirements. Half course time is devoted to theory and diagnosis. The other half is "under the hood" application of classroom theory. Ten weeks, Tuesday, 7-10 p.m., \$61.

#### **Chapter 766: Seminar in Massachusetts Special Education Law F108**

**Daniel A. Burke: Doctoral Student; Special Education Supervisor**

Review of the legal process involved in Chapter 766 prior to the delivery of special education services by public school systems. Preparation for and participation in sample core evaluation team meetings. Provides skills in how to critically evaluate educational plans and monitor the progress of the pupil. Discussion of the special education resources which are available to support the student with special needs, teachers, administrators, parents, and ancillary personnel. Ten weeks, Saturday, 9 a.m.-12 noon, \$60.

#### **Developing Consulting Skills F109**

**Robert C. Hawley: Ed.D.; Consultant in Education and Management**

For educational and organizational consultants, and those interested in developing consulting practices in education, organizational development, or the helping professions. Offers activities and guidelines: assessing needs, providing resources, structuring risks, giving feedback, uncovering blocks to effective collaboration, and determining appropriate task and maintenance ratios. Demonstrates avenues to creative problem solving such as brainstorming, synectics, and lateral thinking; techniques for decision-making such as cost-benefit analysis, risk-reward ratios, and decision charting; and group procedures such as role-playing, simulations, revealed difference surveys, and leaderless discussion groupings. Recommended readings: R. Hawley, *Value Exploration Through Role Playing*; R. and I. Hawley, *Developing Human Potential*; R. Likert, *The Human Organization*. Four weeks, Wednesday, 6:30-9:30 p.m., \$24.

#### **Math Learning Skills F110**

**Herb Koplowitz: Ph.D.**

Designed for students who never took high school math, took it a long time ago, took it but never felt they learned it, or who are simply anxious about math. It is appropriate for students taking math, stat, or science courses, students who have been putting off taking such courses because of math anxiety or low math skills, or those who are avoiding otherwise appropriate career choices except for a deficiency in math. Offers help not only in learning math itself, but also in other areas needed for success in math such as understanding the basic concepts behind the formulas; dealing with anxiety and fear about math; developing problem solving abilities; solving word problems; how to ask questions and to persist in question-asking until your question is answered. Students are taught in small groups so they may receive appropriate individualized attention. Eight weeks, Wednesday, 7:30-9:30 p.m., \$10. Begins March 2, 1977.



## Real Estate F111

David W. Ryan: Real Estate Broker; GRI

Basic knowledge and practices in real estate. Terms, instruments, and relationships, both legal and financial, are stressed in an analysis of real property brokerage, valuation and financing. Provides a base from which the student can explore specialized areas of real estate and is an excellent preparation for the Massachusetts Real Estate License examination. Textbooks are included in the workshop fee. Ten weeks, Tuesday, 7-10 p.m., \$75.

## EARN 6 CONTINUING EDUCATION UNITS

### The People Side of Management (6 CEUs) F112

Carol J. Claflin: Consultant-Trainer, Development Bank

Intensive 60 hour workshop in leadership-management development for a small group of men and women who are in (or about to be in) positions of leadership in business or other organizations. Opportunity to extend skills, knowledge and insight in areas of: motivation, communication, group dynamics and development, decision-making, goal-setting and evaluating, leadership styles, management theories, conflict management, constructively producing change. Workshop is not designed for persons under extreme emotional stress. If you want to improve your ways of dealing with and understanding people, consider this opportunity. Combines cognitive and experiential learning. Friday, March 11, 1977, 9 a.m.-9 p.m., Saturday and Sunday, March 12 and 13, 9 a.m.-6 p.m., Friday, April 15, 9 a.m.-9 p.m., Saturday and Sunday, April 16 and 17, 9 a.m.-6 p.m. Participants should bring their own lunches; supper is included with late workshops. This workshop has been approved for 6 CEUs which will be awarded to all participants attending all sessions (60 required contact hours). Fee: \$152. The CEU is designed for in-service professionals and non-professionals who want to maintain a record of their participation in approved non-credit continuing education programs. For a more complete description of CEUs, see **Program Alternatives or Continuing Education Unit** in the index of this catalog.



## TOWARD TOMORROW

The Toward Tomorrow Fair is a country fair of the future, designed to present numerous possibilities for America's rapidly changing lifestyles, environment and energy needs.

It is a celebration which is both fun and educational. A day at the Toward Tomorrow future fair lets you look at working windmills and solar collectors, taste solar cooked hot dogs, or relax to the tune of a blue-grass band.

The fair will attempt to create an educational forum in which the controversies surrounding various social issues will be exposed. The future of taxation and legal reform, government, food and agriculture, health care, transportation and civil rights are among many pressing problems which the fair will address.

About 17,000 persons attended last year's fair, where over 200 exhibitors, organizations and speakers communicated their ideas.

The Toward Tomorrow Fair will be held again this coming June at the University of Massachusetts/Amherst campus in response to a large number of requests from citizens interested in alternative energy sources and concerned about America's future.

Ralph Nader called the fair "the single best example of education for the citizenry about their choices in America's future" that he's ever seen.

Watch for the University of Massachusetts Summer Catalog and local papers for future announcements about the fair or contact Toward Tomorrow for more information. Write to: Toward Tomorrow, 200 Hills House North, University of Massachusetts, Amherst, MA 01003; or call (413) 545-0474/5.

## 22.5 Million Per Hour:

### IS YOUR ORGANIZATION GETTING ITS FAIR SHARE?

How To Get More Grants: A Systems Approach To Grantsmanship is a one-day credit free seminar to train you to improve your grantsmanship skills. The seminar leader is Daniel Lynn Conrad, consultant and president of the Institute for Fund-Raising in San Francisco. The seminar will be held on Saturday, January 22, 8:30 a.m.-4:15 p.m. at the University of Massachusetts/Amherst. For complete information, obtain a Wintersession Catalog by writing to the Division of Continuing Education, Box 835, Amherst, MA 01002, or call Stan Rosenberg at (413) 545-3420.

# VOLUNTEER MANAGEMENT WORKSHOPS

## Feb.-May, 1977

SPONSORED BY THE SPRINGFIELD ACTION COMMITTEE AND THE DIVISION OF CONTINUING EDUCATION UNIVERSITY OF MASSACHUSETTS/AMHERST

For information, write to Stan Rosenberg, Room 314 Hills House North, UMass, Amherst, MA 01003 or phone 545-3420



## MAP KEY

In the table below, the building abbreviations found in the Schedule Listing appear in alphabetical order in the first column. The name of the building corresponding to the abbreviation can be found in the second column, and its location on the map on the next page appears in the third column. Buildings that do not have an abbreviation are listed under the first letter of their name. The two-letter abbreviations that appear after certain building names in the table below refer to the following residential areas: CA=Central Residence Area, NA=Northeast Residence Area, OH=Orchard Hill, and SW=Southwest Residence Area.

|         |                                 |    |      |                                  |    |
|---------|---------------------------------|----|------|----------------------------------|----|
| AEB     | Agricultural Engineering Bldg.  | B4 | J-AD | John Adams                       | C7 |
| ARND    | Arnold House                    | C3 | JAMS | James House (SW)                 | B6 |
|         |                                 |    | JOHN | Johnson House (NA)               | D2 |
| BAKR    | Baker (CA)                      | E4 |      |                                  |    |
| BARN    | Barn                            | B4 | KENN | Kennedy Tower (SW)               | C6 |
| BART    | Bartlett Hall                   | C5 | KNOW | Knowlton                         | C3 |
| BFLD    | Butterfield                     | E4 |      |                                  |    |
| BOWD    | Bowditch Hall                   | B3 | LEAC | Leach (NA)                       | C2 |
| BOYD    | Boyden Physical Education Bldg. | B5 | LEWS | Lewis                            | D2 |
| BRET    | Brett (CA)                      | D4 | LYON | Lyon (NA)                        | D3 |
| BRKS    | Brooks House                    | E4 |      | Library                          | C4 |
| BRWN    | Brown                           | D2 |      |                                  |    |
|         |                                 |    | MACH | Machmer Hall                     | C4 |
| CASH    | Cashin                          | D1 | MAR  | Marshall Hall                    | D3 |
| CC      | Campus Center                   | C4 | MARX | Marshall Hall Annex              | D3 |
| CCOD    | Cape Cod                        | C4 | MCK  | Mackimmie House                  | C7 |
| CHAD    | Chadbourne (CA)                 | E4 | MCNA | McNamara                         | D1 |
| CHEN    | Chenoweth Laboratory            | B3 | MDSX | Middlesex House                  | C6 |
| CLRK    | Clark Hall                      | D4 | MEL  | Melville House (SW)              | B6 |
| CNCE    | Cance House (SW)                | C7 | MILL | Mills House                      | E4 |
| COLD    | Cold Storage Building           | B4 | MOB  | Mobile Music Classrooms          | B4 |
| COMM    | Community                       |    | MOOR | Moore House (SW)                 | B7 |
| COOL    | Coolidge Tower                  | C6 | MOR  | Morrill Science Center           | D4 |
| COTG-B  | Cottage B                       |    | MOR4 | Morrill Science Center, Sect. IV | D4 |
| COTG-C  | Cottage C                       |    | MRST | Marston Hall                     | B3 |
| CRAB    | Crabtree                        | C3 | MUNX | Munson Hall                      | C5 |
|         |                                 |    |      | Mahar Auditorium                 | D5 |
| DAY     | Day School                      |    |      |                                  |    |
| DHSE    | Dickinson House                 | E3 | NEW  | Newman Center                    | D5 |
| DKSN    | Dickinson                       | B5 | NOPE | North Physical Education Bldg.   | C2 |
| DRA     | Draper Hall                     | C3 |      |                                  |    |
| DWGT    | Dwight (NA)                     | C2 | CHAP | Old Chapel                       | C5 |
| EMLY    | Emily Dickinson House (OH)      | E3 | OCAM | Off Campus                       |    |
|         | Draper Annex                    | C3 |      |                                  |    |
|         |                                 |    | PAIG | Paige Laboratory                 | B3 |
| EDUC    | Education Building              | C1 | PAT  | Patterson House (SW)             | C7 |
| ELAB    | Engineering Laboratory          | B3 | PIIB | Public Health Building           | D4 |
| EMSN    | Emerson House                   | B7 | PIER | Peirpont (SW)                    | B7 |
| ENGE    | Engineering Building East       | C3 | PTEN | Project Ten                      | B7 |
| ENGX    | Engineering Annex               |    |      | Parking Garage                   | C4 |
| EWC     | Everywoman's Center             | C5 |      |                                  |    |
|         |                                 |    | Q-AD | John Quincy Adams                | C7 |
| EUGE    | Eugene Field House (OH)         | E3 |      |                                  |    |
| FDRY    | Foundry                         |    | SBA  | School of Business Admin.        | D5 |
| FERN    | Fernald Hall                    | D5 | SC   | South College                    | C4 |
| FLIN    | Flint Laboratory                | B4 | SK   | Skinner Hall                     | D4 |
| FREN    | French Hall                     | D4 | SMTH | Smith College                    |    |
|         |                                 |    | STK  | Stockbridge Hall                 | B3 |
| GDEL    | Goodell                         | C5 |      | Student Union                    | C4 |
| GNGH    | Greenough (CA)                  | E4 |      |                                  |    |
| GOES    | Goessmann Laboratory            | C3 | THAT | Thatcher House                   | D3 |
| GORM    | Gorman                          | E5 | THOM | Thompson Hall                    | B4 |
| GRAY    | David Grayson House             | E3 | THOR | Thoreau House                    | B6 |
| GRES    | Graduate Research Center        | C3 | TOBN | Tobin Hall                       | C5 |
| GRIN    | Grinnell Arena                  | B4 | TWR1 | Tower 1                          |    |
| GUN     | Gunness Laboratory              | B3 |      |                                  |    |
|         |                                 |    | VAN  | Van Meter House                  | E4 |
| HAMP    | Hampshire House                 | C6 |      |                                  |    |
| HAS     | Hasbrouck Laboratory            | C4 | NOAH | Noah Webster House (OH)          | E3 |
| HERT    | Herter Hall                     | C5 | WASH | Washington Tower (SW)            | C7 |
| HICK    | Curry Hicks P E Building        | C5 | WHLR | Wheeler                          | E4 |
| HILT    | Hilton House                    |    | WILD | Wilder Hall                      | D4 |
| HOLD    | Holdsworth Hall                 | B3 | WYKI | Wysocki House                    |    |
|         |                                 |    |      | Whitmore Admin. Bldg.            | C6 |
| 48 INF1 | Infirmary                       | D4 |      |                                  |    |





JAN 3 1977

UNIV. OF MASS.  
ARCHIVES

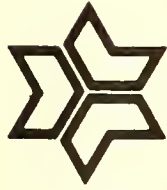
THE DIVISION OF CONTINUING EDUCATION, UNIVERSITY OF MASSACHUSETTS

Division of Continuing Education  
Box 335  
Amherst, MA 01002

Non-Profit Organization  
BULK RATE  
U.S. POSTAGE PAID  
Amherst, Massachusetts 01002  
Permit Number 2



# Course Listing



University of Massachusetts at Boston

1976-1977



FIRST SEMESTER

|                        |                       |                                                 |
|------------------------|-----------------------|-------------------------------------------------|
| September 1            | Wednesday             | Special Add/Drop Day                            |
| September 2            | Thursday              | First day of classes                            |
| September 6            | Monday                | Holiday (Labor Day)                             |
| September 10           | Friday                | Add/Drop Ends                                   |
| October 11             | Monday                | Holiday (Columbus Day)                          |
| October 12             | Tuesday               | Monday Schedule                                 |
| October 20             | Wednesday             | Mid Semester                                    |
| October 29             | Friday                | Pass/Fail Deadline                              |
| November 10            | Wednesday             | Thursday Schedule                               |
| November 11            | Thursday              | Holiday (Veteran's Day)                         |
| November 22 - Dec. 3   | Monday - Friday       | Advance Registration                            |
| November 25-28         | Thursday - Sunday     | Thanksgiving Recess                             |
| November 29            | Monday                | Classes Resume                                  |
| December 8             | Wednesday             | Classes End                                     |
| December 9 - 14        | Thursday - Tuesday    | Reading Period                                  |
| December 15-22         | Wednesday - Wednesday | Final Exam Period                               |
| December 23            | Thursday              | Emergency make-up in case of snow cancellations |
| <u>SECOND SEMESTER</u> |                       |                                                 |
| January 21             | Friday                | Special Add/Drop                                |
| January 24             | Monday                | Classes begin                                   |
| January 28             | Friday                | Add/Drop Ends                                   |
| February 21            | Monday                | Holiday (Washington's Birthday)                 |
| February 22            | Tuesday               | Monday Schedule                                 |
| March 11               | Friday                | Mid Semester                                    |
| March 18               | Friday                | Pass/Fail Deadline                              |
| March 26 - April 3     | Saturday - Sunday     | Vacation                                        |
| April 4                | Monday                | Classes Resume                                  |
| April 18               | Monday                | Holiday (Patriots Day)                          |
| April 19 - 29          | Tuesday - Friday      | Advance Registration                            |
| May 6                  | Friday                | Last Day of Classes                             |
| May 9 - 13             | Monday - Friday       | Reading Period                                  |
| May 13                 | Monday                | All senior grades due                           |
| May 16-23              | Monday - Monday       | Final Exams                                     |
| June 2                 | Thursday              | Commencement                                    |

TABLE OF CONTENTS

|                                    |       |
|------------------------------------|-------|
| ACADEMIC CALENDAR.....             | 1     |
| ACADEMIC REGULATIONS .....         | 2-5   |
| ADMISSIONS .....                   | 6     |
| GENERAL INFORMATION .....          | 7-12  |
| COLLEGES OF THE UNIVERSITY .....   | 13    |
| SPECIAL PROGRAMS .....             | 19-23 |
| DIRECTORY OF COURSES.....          |       |
| ANTHROPOLOGY .....                 | 23    |
| ARMENIAN .....                     | 27    |
| ART .....                          | 27    |
| BIOLOGY .....                      | 31    |
| BLACK STUDIES .....                | 35    |
| CHEMISTRY .....                    | 36    |
| CHINESE .....                      | 37    |
| CLASSICS.....                      | 38    |
| ECONOMICS .....                    | 39    |
| ENGLISH .....                      | 42    |
| FRENCH.....                        | 48    |
| GERMAN .....                       | 52    |
| GREEK .....                        | 56    |
| HISPANIC STUDIES .....             | 57    |
| HISTORY.....                       | 57    |
| HUMANITIES .....                   | 64    |
| INTERDISCIPLINARY .....            | 66    |
| ITALIAN.....                       | 66    |
| JAPANESE .....                     | 68    |
| LATIN.....                         | 69    |
| MANAGEMENT.....                    | 70    |
| MATHEMATICS.....                   | 75    |
| MUSIC.....                         | 78    |
| NANTUCKET PROGRAM.....             | 80    |
| PHILOSOPHY .....                   | 81    |
| PHYSICS.....                       | 83    |
| POLISH.....                        | 85    |
| POLITICS.....                      | 86    |
| PORTUGUESE.....                    | 89    |
| PSYCHOLOGY.....                    | 90    |
| STUDY OF RELIGION.....             | 94    |
| RUSSIAN.....                       | 95    |
| SOCIOLOGY.....                     | 97    |
| SPANISH.....                       | 102   |
| TEACHER CERTIFICATION PROGRAM..... | 105   |
| THEATRE ARTS.....                  | 105   |
| WOMEN'S STUDIES.....               | 107   |
| MASTER'S DEGREE PROGRAM .....      |       |
| BIOLOGY GRADUATE PROGRAM.....      | 108   |
| CHEMISTRY GRADUATE PROGRAM.....    | 110   |
| ENGLISH GRADUATE PROGRAM.....      | 111   |
| HISTORY GRADUATE PROGRAM.....      | 112   |
| MATHEMATICS GRADUATE PROGRAM.....  | 113   |



# MAJOR DEGREE PROGRAMS

|               |                                |                 |              |
|---------------|--------------------------------|-----------------|--------------|
| Anthropology  | German                         | Italian         | Physics      |
| Art           | Greek                          | Latin           | Politics     |
| Biology       | History                        | Legal Education | Psychology   |
| Black Studies | Housing and Community Services | Management      | Russian      |
| Chemistry     | Development                    | Mathematics     | Sociology    |
| Classics      | Human Growth and Development   | Music           | Spanish      |
| Economics     | Institutions                   | Philosophy      | Theatre Arts |
| English       |                                |                 |              |

French Concentrations are available in Black Studies, Law and Justice, Religious Studies, Teacher Certification for the elementary and secondary schools, Urban Social Services, Urban Studies and Women's Studies. Advisor's are available to those wishing to pursue Pre-law, Pre-medical, Pre-dental, Pre-engineering, or Pre-veterinary programs.

## ACADEMIC REGULATIONS

Grades shall be reported according to the following letter system. No other interpretation of this letter system shall be authorized.

|             |                                                |
|-------------|------------------------------------------------|
| A-Excellent | INC.-Incomplete                                |
| B-Good      | P-Passing (Pass/Fail Option)                   |
| C-Fair      | Y-Interim grade in a declared year long course |
| D-Passing   |                                                |
| F-Failure   |                                                |

The grade of Incomplete shall be reported only when a portion of the assigned or required class work, or the final examination, has not been completed because of the student's serious illness, extreme personal circumstances, or for scholarly reasons at the request of the instructor. If the student's record is such that he would fail the course regardless of the result of the missing work, he shall fail. A student can obtain credit for an incomplete only by finishing the work of the course within the first two weeks of the following semester. The grade of incomplete is converted to a failure if the course requirements have not been satisfied by that time. Exceptions to the two week deadline may be requested from the appropriate agency in cases of protracted illness, critical personal problems or for scholarly reasons at the request of the instructor. The initiative for removal of the incomplete grade rests with the student.

An incomplete on a final grade report is not calculated in arriving at a temporary quality point average. When the incomplete is later converted to a grade, the quality points are changed and the student is notified.

Once a grade is submitted, it cannot be changed except on approval of the Department Chairperson.

## PASS/FAIL OPTION

A student may elect one course each semester to a maximum of eight on a Pass/Fail basis provided he presents a P/F option card to the Registrar's Office at the time announced during each semester. The grade of Pass will be included in the graduation credits but not in the quality points or cumulative average. A P/F once submitted, cannot be withdrawn or changed to a grade. A student must be carrying 3 courses or 12 or more credits during the semester in which he/she elects the P/F option.

## QUALITY POINTS

Quality points are assigned to course grades as follows: A=4; B=3; C=2; D=1; F=0. The quality points for each grade are multiplied by the number of credits for the course, and the totals for all courses are added to arrive at the number of cumulative quality points. The number of cumulative quality points is divided by the number of cumulative credits carried to arrive at the cumulative quality point average. A "P" is not averaged in the cumulative average.

# RETENTION AND GOOD STANDING

## Cumulative Index Required for Retention

| Semester | Cumulative Average Retention |
|----------|------------------------------|
| 1        | 0.0                          |
| 2        | 1.3                          |
| 3        | 1.5                          |
| 4        | 1.6                          |
| 5        | 1.7                          |
| 6        | 1.8                          |
| 7        | 1.9                          |
| 8        | 2.0                          |

NOTE: Students who elect a five-year program are expected to maintain a 2.0 average for the last three semesters.

## ACADEMIC DISMISSAL

A student whose cumulative average falls below the requirement for retention will be Academically Dismissed.

## SCHOLASTIC PROBATION

A student will be placed on Scholastic Probation if his semester average is below 1.5 after any of the first three semesters or below 2.0 after any of the subsequent semesters.

Any student who is at the probation level shall be warned by a statement on the bottom of his copy of the semester grade report. This warning is to indicate that continued below-standard performance will result in failure to graduate or in academic dismissal.

Probation precludes membership in University and College governance bodies and Committees, and also proscribes holding office in student organizations.

## Probation Appeals

The Committee on Standards and Scholarship shall be charged with modifying, extending, or limiting the restrictions on a student during a period of Scholastic Probation, and determining the limit of its duration. The Committee shall report all such modifications to the University Assembly.

## Readmitted Students

A readmitted student must attain the cumulative average required for the class to which he has been assigned at the time of readmission.

## Transfer Students

The former cumulative average of a transfer student does not carry over to this University; the student begins a new cumulative average upon admission. A transfer student is not dismissed after the first semester because of his cumulative average. However, for all subsequent semesters, the student must attain the cumulative average necessary for the class to which he was assigned.

## Failed Courses

A failed course in a subject required for the degree must be repeated. If the original failed course is repeated and passed, it remains on the student's record but will not be computed in the cumulative average. A course once passed may not be repeated for a higher grade.

## COURSE CHANGES--FIRST FIVE ACADEMIC DAYS

1. Add Period--The student is allowed 5 academic days from the beginning of the semester to add, drop, or substitute a course without notation on the record.
2. Add/Drop Procedure--If a student has good reason to drop one course and add another, he may accomplish this in the following manner:
  - A. Secure and add/drop card from the Registrar's Office
  - B. Have the instructor of the course to be added certify that space is available in the desired section
  - C. Secure release from the instructor of the course to be dropped
  - D. Secure the Advisor's signature
  - E. Submit the completed add/drop card to the Registrar's Office

3. Withdrawal-- If the student simply wishes to withdraw from a course (within the first five days) he may do so with the instructor's approval, using the following procedure:
  - a) obtain an add/drop card from the Registrar's Office
  - b) obtain the necessary signatures and return the card to the Registrar's Office

#### COURSE CHANGES--AFTER 5th ACADEMIC DAY

1. From the 6th academic day to the last day of classes, a student may drop a course subject to minimum load regulations (3 courses or 12 credit hours for matriculated students). The notation of withdrawal on the student's record will be the grade of "W" which is not computed in the grade point average.
2. Procedure--(6th academic day to the last day of classes). To be properly withdrawn from a course the student must accomplish the following:
  - a). Secure a course withdrawal card from the Deans' Office
  - b). Schedule a conference with his advisor and the instructor of the course and secure their signatures.

#### WITHDRAWAL FROM THE UNIVERSITY

1. If a student withdraws prior to the last day of classes, a "W" for each course will be recorded along with his withdrawal date.  
The effective date of withdrawal is that on which all proper forms are completed, signed, and returned to the Registrar.

2. Withdrawal Procedure--To withdraw from the University the student shall do the following:
  - a). Consult with a member of the Dean's advising staff, who will provide and sign the necessary form.
  - b). Receive clearance from all departments of the University where he may have accrued charges; library, laboratories, health services, Bursar's office, Student Affairs Office, bookstore. This will clear the student's records so that he may obtain the appropriate refunds and/or transcripts.
  - c). Return the completed form to the Registrar's Office

3. If any charges are outstanding, the student's permanent records will be frozen and no transcripts will be issued. Failure to complete a withdrawal form will result in the recording of the grade of "F" in all courses at the conclusion of the semester.

4. Any student withdrawing during the fall semester after the November 1 readmission deadline will not be able to return for the spring semester.

#### CHANGE OF MAJOR

Any student who has stated a major and wishes to change it should consult with an advisor in the Dean's Office and obtain a change of major form, should receive approval and a new advisor from the Chairperson of the new department, and should return the form to the Registrar's Office for processing.

#### ATTENDANCE

Attendance at all scheduled classes is expected. No administrative control of attendance is exercised except as hereinafter provided. In cases of illness, students are to explain their absences directly to their instructors. Grades of students who meet requirements of the instructor in making up work shall not be reduced for absence because of illness.

All absences due to illnesses should be reported to the University Health Service. Although students are expected to deal directly with faculty members, the health service will verify dates of absences if requested by faculty members.

#### CONDUCT

A high standard of conduct, based on self-respect and consideration for the rights of others, is expected of all students. The disciplinary system of the University is based upon a published code of student conduct, and is administered by a Committee of faculty and students. Hearings are conducted so as to ensure due process and guarantee fair and impartial consideration. It should be understood that the University, acting through its Chancellor or any administrative officer designated by him, in emergency situations, distinctly reserves the right to suspend a student. A student so suspended by administrative action is entitled to a speedy consideration and disposition of his case by the University Committee on student discipline.

#### COURSE LOAD

The normal course load for freshmen and sophomores is four courses for 16 credit hours and for Juniors and seniors, five courses for 15 credit hours. A student with a cumulative average of 3.0 or 3.5 in the previous semester, may take an extra course with the permission of his/her advisor.

A student majoring in a science who must take laboratory courses of more than 4 credits may assume a load of 18 credits. This is intended especially for Juniors and seniors who may find it necessary to take three 3-credit courses, a required 4-credit core curriculum course, and a 5-credit laboratory course (or similar variation) in one semester.

Students may elect to plan a four-year (eight semester) or five-year (ten semester) program.

#### SUMMER COURSES OUTSIDE THE UNIVERSITY

In order to receive credit for summer course work outside the University, a student must receive prior authorization from the department concerned for each course taken. A course authorization form may be obtained from the Registrar's Office; the original to be returned to the Registrar, one copy to be retained by the department, and one copy to be retained by the student. In general, a grade of "B" or higher is required for transfer credit. Permission to accept a grade lower than "B" may be obtained only from the department to which the credit is being transferred. It is the student's responsibility to see that a transcript is sent to the Registrar upon completion of the program.

#### DEPARTMENTAL HONORS PROGRAM

To graduate with departmental honors, a student must have either: (1) successfully completed some special honors work, such as a thesis or seminar; or (2) earned a 3.5 Grade average in his major field, the awarding of honors not to be automatic, however, but to depend on the recommendation of an honors committee in his/her department. Admission to honors work is left to the discretion of the departmental honors committee. However, a minimum overall grade point average of 3.0 is required. Not more than 6 credits may be received for special honors work.

If a student entered in an honors course completes the work satisfactorily but not at an honors level, he shall receive credit for the course toward graduation.

#### UNIVERSITY HONORS

To graduate with University honors a student shall earn averages as follows:

Summa cum laude-----Cumulative average of 3.75 or above  
Magna cum laude-----Cumulative average of 3.50 to 3.74 inclusive  
Cum laude-----Cumulative average of 3.30 to 3.49 inclusive

#### GRADUATION REQUIREMENTS

1. In order to graduate, a student must acquire a total of 124 credits. Students who qualify for Advanced Placement in languages or other 4 credit freshman-sophomore courses may graduate with as few as 120 credits. All students must accumulate a minimum of 45 residency credits at the University.



2. A student shall meet the requirements of a major department.

3. A student shall complete the core requirements of his/her college.

#### CORE REQUIREMENTS COLLEGE I

##### Option A

Each student in College I is required to take two semesters of writing, normally during the freshman year. In addition, each student must take a distribution pattern consisting of twelve courses from among the following six areas:

- A. Historical and cultural studies
- B. Foreign language (or intermediate proficiency)
- C. Philosophy, the arts, literature
- D. Mathematics, computer language, statistics
- E. Natural sciences
- F. Social and behavioral sciences

In fulfilling this requirement, the student must take two or three courses in each of four areas, and one or two in other areas, as necessary, to bring the total to twelve. No more than three courses may be allowed toward the requirement in any one area.

In cases where a course may be appropriate in the requirements in more than one area, the student may count it in only one, unless otherwise specified by the course description. Courses in a student's major may count toward the appropriate requirement. Freshman writing courses, honors courses, independent studies courses, special topics courses and certain applied courses do not satisfy distribution requirements. In the case of foreign languages, intermediate proficiency is satisfied either by examination or by successful completion of a foreign language course at the 200 level. Intermediate proficiency satisfies 3 of the 12 distribution courses. A student who does not achieve proficiency may offer only the courses taken in one foreign language in satisfaction of the distribution requirements.

##### Option B

Students who demonstrate that their educational goals cannot be met through satisfaction of the core requirements may petition to design their own core curriculum in consultation with an assigned advisor. The purpose of such a self-designed curriculum must be to satisfy the college's concern for educational breadth in the context of the student's own needs.

#### Implementation

Students in the class of 1978 must satisfy the above core requirements (option A or B). Students in the class of 1977 may, at their option, satisfy either the above requirements or the requirements in effect prior to September 1, 1974.

#### CORE REQUIREMENTS COLLEGE II

##### A. Core Requirements

1. One year of training in writing to be taken in the freshman year
2. Courses in foreign language as follows: Students who demonstrate proficiency in a foreign language at the intermediate level shall be exempt from a language requirement. Students who meet the entrance requirements regarding language or otherwise demonstrate elementary proficiency in a foreign language shall take one year of a foreign language at the intermediate level or one year of a foreign literature in translation.
3. Three terms of course work in the social sciences, of which at least one must be taken in history and two other disciplines.
4. Three terms of course work in the natural sciences or in mathematics, of which at least two terms must be taken in the same discipline, and at least one in a natural science.

B. As an alternative to A; a student may choose to design his own core curriculum, in consultation with a faculty advisor and approval of the Senate Committee. Questions concerning this program should be referred to the College Dean's Office.

#### DEGREE REQUIREMENTS--MANAGEMENT PROGRAM COLLEGE OF PROFESSIONAL STUDIES

The following paragraphs describe the requirements for completion of a Bachelor's Degree in Management that will be in effect for students who enter the program in September 1976, or who entered as freshmen in September, 1975. Students who entered the program as transfers with a minimum of 40 credits toward graduation in September 1975 or January 1976 may follow the requirements outlined in the document entitled "Requirements for the Bachelor's Degree in Management" dated July, 1975. Copies of this document are available in the Office of the Dean.

Students can satisfy the requirements described below in any of three ways:

- They can take courses offered by the Management Program and other Colleges of UN/B, as appropriate.
- They can transfer credit for courses taken at other accredited two and four-year institutions, as appropriate.
- They can demonstrate that they have achieved the proficiency sought by the required course(s) through an examination that will be provided by the Management faculty. (Note: In the Fall, 1976, this option will be limited to courses taught by the Management faculty.)

Students interested in satisfying any of the College or Program requirements by the latter two of these methods should consult with Ms. Watson in the Office of the Dean.

The requirements for a Bachelor's Degree in Management from the College of Professional Studies can be divided into two major parts, the Applied Component and the General Education Component. These requirements are outlined below. A full explanation of each of these two parts of the Management Program can be found in the section of this booklet entitled "Colleges of the University" under "The College of Professional Studies." It should also be noted that students in the College of Professional Studies will need to satisfy certain campus-wide requirements for receiving the baccalaureate degree. These requirements specify that all students must complete a total of 124 credits to receive the baccalaureate degree. A minimum of 45 of these credits must be taken at the University of Massachusetts at Boston.

#### Management Program Requirements Applied Component

The Applied Component of the Management Program includes four parts: Introductory and Skills Courses; the Management Core; the Management Concentration; the Internship. All students in the Management Program will need to satisfy the requirements of each part of the Applied Component.

##### Introductory and Skills Courses:

This part of the program consists of three courses for students who enter as freshmen. Students who enter as transfers with more than 40 credits toward graduation may have satisfied this requirement before entering the program, and in any case, such transfers will be required to take a maximum of two of these. The three courses are:

**Introduction to Management:** This one-semester course will normally be taken during the first semester in residence by freshmen. This course is not required of students who enter as transfers.

**Statistics:** This is a one-semester course, normally taken in the sophomore year, or in the first semester in residence by transfers needing to complete the requirement.

**Economics:** All students are required to take at least one course in Economics. The course will normally be taken in the freshman or sophomore year, or before graduation by transfers who have not completed such a course before entering the Management Program.



#### The Management Core

The Management Core consists of a series of courses, normally taken during the sophomore and junior years. The Core includes the following required courses:

|             |                                                      |
|-------------|------------------------------------------------------|
| MGT 340-341 | Management of Financial Resources                    |
| MGT 350-351 | Human Resources Management                           |
| MGT 330-331 | Marketing Management in the Public & Private Sectors |
| MGT 320-321 | Operations Research/Operations Management            |

Students who enter the Management Program without having completed the Essential Skills Requirement in Quantitative Methods (See General Education Requirements) must do so prior to taking Operations Research.

#### The Management Concentration

The Concentration is a set of specialized courses in a subfield of Management. These courses are normally taken during the junior and senior years.

There are two basic ways in which the concentration can be completed. The first way is by completing the requirements of one of the eight structured concentration areas. These areas include: Human Resources Management, Marketing, Public Financial Management, Public Policy Analysis, Public Management, Private Financial Management, Accounting, and Management Science. The second way is by taking a set of three to five courses in an individually designed area of concentration. The content of this concentration is developed by the student and agreed upon by his academic advisor.

All students must take a minimum of two concentration courses from the Management Program or successfully complete a challenge examination in two concentration courses to satisfy the degree requirements for the concentration. With respect to any other courses required for the concentrations, students may transfer credit for courses taken at other institutions provided that: (1) where the student is seeking to satisfy a requirement for a specific course, the course taken at another institution must be comparable to the required concentration course; (2) where the student is seeking to satisfy a requirement involving an elective course, the course taken at another institution must be appropriate to the student's chosen concentration.

#### Internship

The internship is an approved full or part-time work experience for a student in a business, government agency, educational institution, hospital, or other kind of organization. The typical internship will involve about twelve hours of work per week for an academic semester and earn the student four academic credits, but placements with longer hours and more credit can also be arranged. Each placement is decided individually based on the student's interests, talents, and experiences moderated by the practical limitations of the job market. Students help to set up their own internships.

#### Management Program Requirements in General Education

The general education component includes five requirements. These requirements can be satisfied by many different patterns of coursework, so each student will have considerable opportunity to elect the specific courses he or she wishes to take while also satisfying these requirements. In some cases, the same course may be used to satisfy more than one requirement. These are the five requirements:

**The Essential Skills Requirement:** Each student must achieve a basic mastery in the areas of logical thought, written and oral expression, and the quantitative analysis and demonstrate this mastery in each area at a level of proficiency established by the faculty of the College. Students who entered the program as freshmen in September, 1975, shall be exempt from this requirement provided that they successfully complete the two semester sequences in Quantitative Methods and Communications.

**The Fields of Study Requirement:** Each student must demonstrate an understanding of some methods and concepts associated with several academic disciplines by completing at least one course in each of the following seven fields of study:

- Individual and Human Life
- Social Organization
- History
- Comparative Cultures
- Ethics and Morals
- Aesthetics
- Physical World

Individual students will need to work out with their academic advisors the specific courses they will take to satisfy these requirements.

Students entering the program as freshmen will take a basic course called Liberal Arts and the World of Work, designed to introduce them to several fields in the Liberal Arts.

**The Special Field of Study Requirement:** Each student must successfully complete a minimum of five courses in one of the seven Fields of Study. At least 3 of the 5 courses must be from a single academic discipline.

**The Problems of Inquiry Requirement:** This requirement is concerned with different aspects of the problem of making intelligent statements about the world around us. Each student will need to successfully complete at least 3 courses concerned with different aspects of this problem. Students may choose the courses they wish to apply to this requirement from any appropriate course offered by the University. Academic advisors will help students identify courses in different fields that could apply to this requirement.

Courses used to satisfy this requirement may also be used to satisfy the Fields of Study Requirement and the Special Field of Study Requirement.

#### Appeal Procedure

In any case where a dispute arises between a faculty member or academic advisor and a student, affecting satisfaction of a degree requirement or the awarding of credit, an appeal may be taken to the Dean of the College in writing within 30 days of the disagreement.

#### FINAL EXAMINATIONS

When the examination schedule is published, any student who finds himself scheduled for two examinations at the same time or for three examinations in one day, should report the situation directly to the instructor(s) concerned.

#### PRIZES AND AWARDS

##### Alfred R. Ferguson Prize

The Alfred R. Ferguson prize is awarded annually to an undergraduate for distinguished work in American literature. The Ferguson fund was established in 1976 to honor the memory of Professor Ferguson, a widely respected teacher and scholar who helped develop the University in its first decade.

##### Richard J. Landry Prize

The Richard J. Landry prize is awarded annually to an undergraduate for distinguished work in politics.

##### Brian Rattigan Prize

A cash award made annually for outstanding creative achievement. Established by his friends and classmates in memory of Brian Rattigan, a poet and member of the first graduating class of the University of Massachusetts at Boston, who drowned during the summer before his senior year. Selection of the recipient is made by a special committee of faculty and students.

#### John W. Ryan 1966 Faculty Convocation Award

Awarded each year at the honors reception to the junior who attained the highest average at the completion of the second year at the University. Established in 1966 partly in order to commemorate the convocation of the faculty and partly in order to recognize academic excellence in the student body.

#### Luis Emilio Soto Prize

Awarded each spring at the Commencement exercises to the senior majoring in Spanish who best reflects the humanistic qualities and the spirit of Professor Soto. Inaugurated in May, 1970, and named for Professor Luis Emilio Soto (1902-1970), who, in his short stay at the University of Massachusetts at Boston, wholly won the hearts of his students and colleagues by his devotion to them and to their work.

#### ADMISSIONS

##### Applications

Applications for admission may be obtained from the Admissions Office, University of Massachusetts/Boston, Boston, Massachusetts 02125. Starting with the applications for January, 1977, entrance, an application fee of \$10.00 in-state and \$25.00 out of state must accompany the application.

Applicants are invited to visit the campus where group meetings are held daily at 3:00 p.m. from September through June. An applicant should be assured, however, that if he is unable to visit Boston his application will be in no way disadvantaged.

If the candidate or his guidance counselor has a question that cannot readily be resolved.

##### Testing Procedure

All applicants must take the Scholastic Aptitude Test given by the College Entrance Examination Board. The University also recommends three College Board Achievement Tests, including English composition and a language. All College Board Test reports must be sent directly to the Admissions Office, University of Massachusetts at Boston, Boston, Massachusetts 02125, from the College Board Testing Center. The applicant himself must notify the Board that he wishes his scores sent to this University. Applicants who have been out of school for more than two years should take the Scholastic Aptitude Tests again.

##### Foreign and Out-of State Students

Since the University of Massachusetts at Boston has a five percent limit on out-of state and foreign students, the competition among these candidates is always extremely keen.

All foreign students whose schooling has been in English are required to submit results of Scholastic Aptitude Tests. Students whose native language is not English must submit results of the Test of English as a Foreign Language. Information regarding test centers and dates for both the SAT and the TOEFL may be obtained from the College Entrance Examination Board P.O. Box 592, Princeton, New Jersey 08540 or, if you are in the Boston area, from Boston University's Testing and Counseling Center.

As a state University, the University of Massachusetts at Boston is able to offer no financial aid to foreign students. Therefore, foreign students should make certain that they can meet all expenses before applying for admission.

#### High School Preparation

The subjects of preparatory study recommended for admission call for the satisfactory completion of a four year high school course or its equivalent and are stated in terms of units. A unit is the equivalent of at least four recitations a week for a school year. High school graduation alone is not sufficient. The applicant's record must indicate capacity for handling the quality of scholastic work which the University has established as its standard of achievement. Sixteen units of secondary school work must be offered, selected according to the following recommendations:

|                                                                             |   |
|-----------------------------------------------------------------------------|---|
| College Preparatory Mathematics (2 algebra and 1 geometry recommended)..... | 3 |
| English.....                                                                | 4 |
| Foreign Language (2 yrs. of a language).....                                | 2 |
| U.S. History.....                                                           | 1 |
| Laboratory Science.....                                                     | 1 |

The remaining units are elective and may be selected from the following subject matter:

- A. Mathematics
- B. Science
- C. Foreign Language
- D. History and Social Studies
- E. Free Electives (not more than four units)

Free elective subjects are those not included in the preceding groups, for example: Music, Art, Drawing, Typewriting, Aeronautics, Agriculture, Home Economics, etc. Such free electives are allowed in order that the student who wishes may have some opportunity to elect other high school offerings, while at the same time covering the fundamental requirements for college work.

Students planning to major in the Physical Sciences and Mathematics should, if possible, offer two years of Algebra, one of Plane Geometry, and one-half year of Trigonometry. Preparation in Analytical or solid Geometry, Chemistry, Physics and Introductory Calculus is also strongly recommended.

Candidates of exceptional ability and promise may be considered for admission even though some of the prescribed courses are not included in their high school records. Candidates who are deficient in one or more subject required for admission to the University must present records which are otherwise strong.

Some of the programs offered at the University will serve students through non-traditional programs and courses, and in these programs the experiences and background of the applicant will be evaluated in addition to, or instead of, the traditional academic preparation.

##### Equivalency Diploma

In some cases the Massachusetts High School Equivalency Diploma may be substituted for the usual high school program. It is suggested that persons with an equivalency diploma arrange for a personal interview with a member of the admissions staff to discuss their goals and possible plans for meeting these goals.

##### Acknowledgement and Notification

In most cases applicants will be notified by letter during April of the action taken on their application for September and during December for January. Applicants who present strong academic records, enthusiastic school recommendations, and satisfactory College Board Scores will receive earlier notification. Freshmen applicants accepted at an earlier date; however, are under no pressure to make a final decision in regard to their choice of college before the Candidate's Reply Date of May 4. In this way the burden of multiple applications on high school guidance counselors and college admissions officers may be lessened.

##### Advanced Placement

Students whose scores on Advanced Placement examinations meet standards determined



by the University shall be regarded as meeting the equivalent University requirements. The College Entrance Examination Board Advanced Placement Examinations or special examinations given by the University will determine advanced placement.

#### Transfer Students

Transfer applications are encouraged especially from two year colleges. Transfers are required to submit all college transcripts. Submission of high school records and Scholastic Aptitude Test scores is optional for students with more than one full-time year of college level courses. Any student who has been previously enrolled in a college is considered a transfer and must file a transfer application form.

Any course taken at an accredited institution which is comparable in substance to a course offered at the University of Massachusetts at Boston and in which the grade is "C" or better, will transfer and be applied, wherever possible, to the graduation requirement.

Records must be sent directly to the Admissions Office from the previous school.

All transfer students who are candidates for a Bachelor's degree must take at least 45 semester credits in residence as well as fulfill all college requirements.

#### Community College Transfers

As a part of the Massachusetts system of higher education, the University recognizes its kinship with the Regional Community Colleges and therefore, guarantees that the student who has completed the Community College Transfer Program, who is fully qualified, and has the recommendation and required cumulative average of the Community College, will be accepted for transfer into the four year program. Appropriate courses given at the Community College will be fully accepted for transfer credit and applied to core curriculum requirements where possible.

#### Transfer Compact

The University of Massachusetts at Boston encourages applications for part-time study. Part-time students may be either degree seeking or non-matriculated. Because of the often non-traditional backgrounds and experiences of part-time students, a personal interview may become an important part of the evaluation and thus may be required of an applicant for part-time study. Applicants who already have a Bachelor's Degree should apply as Post-graduates and need only submit the final college transcript.

#### Evening Schedule

Regular courses are offered during late afternoon and evening hours, thus, enabling students who cannot attend the University during the daytime to carry a full-time or part-time course load after 4:30 p.m.

#### SPECIAL ADMISSIONS PROGRAM

In addition to its regular admissions process, UMB is committed to recruiting students who have potential for college level studies but requires an intensive program of basic skills development in order to perform adequately at the freshman level.

Special Admissions is particularly aimed at inner city residents and other prospective applicants from economically and educationally disadvantaged backgrounds--that is potential students who, though capable and willing, may lack some of the conventional prerequisites for college admissions such as: SAT scores etc.

Students recruited through Special Admissions will be conditionally accepted. Final admission to UMB as regular freshmen will be contingent upon successful completion of Pre-College Basic Skills Development Program offered before the beginning of each semester. In this Pre-College Program, students will be able to: work on their academic deficiencies; learn about various possibilities for further educational growth; and receive individualized assistance to prepare for University studies. During their first semester at UMB as a regular freshman, Special Admissions students will be enrolled in three University courses while at the same time they will also participate in a variety of academic support programs aimed at further developing their competence for successful college studies.

To apply for the Special Admissions Program, candidates must submit the following materials before their application can be reviewed:

1. Completed application form
2. Transcripts from high school and any colleges attended
3. Two letters of recommendation
4. An autobiographical statement

After completion of the application and receipt of the supporting materials, an interview will be arranged. The purpose of the interview is to determine the applicant's interest and motivation; to determine his potential for college level study at UMB; and to assess the suitability of the Basic Skills Development Program in remedying his academic deficiencies.

Special Admissions meetings are held every Wednesday at 1:00 p.m. and by appointment in the Admissions Office Conference Room, Administration Building, 1st floor Harbor Campus. For information and application materials, contact Ms. Henrietta Ball, Assistant Director of Admissions, University of Massachusetts at Boston, Boston, Massachusetts 02125, telephone 287-1900 ext. 2172.

Financial Aid materials will be supplied along with admissions materials.

#### ADVISING AND STUDY COUNSELING

The staff of the College Dean's Office is available to provide students with information on the curriculum, general requirements and program planning. Tutorial and study skills assistance is available to students through this office. Small classes in basic writing techniques and in reading skills are established each semester. Individual and group tutorials are available in the core courses such as mathematics, languages and natural sciences. Students and faculty members should contact the Dean's Office for further information on both types of programs.

#### CENTRAL ADVISING OFFICE

General information and advice on graduate school opportunities and requirements is available to all students in the Central Advising Office, as is specific information on the preparation and entrance requirements for professional fields, such as business administration, the various health professions, law, medicine, and social work. Financial aid information, including qualifications necessary for national fellowship competitions, (such as Denforth and Fulbright fellowships) is also to be found in this office.

A Foreign Student and International Programs Advisor is available to give general counseling and specific visa information to all foreign students. The Advisor also serves as a resource for information on study abroad and international exchange opportunities.

An Advisor to Spanish-speaking Students is available to provide counseling and general academic support to Hispanic students.

An Advisor to Returning Women Students is available in this office to provide advice, general counseling and special programs for women returning to the University to continue their education.



#### MEDIA CENTER

UMB Media Services provide a full range of Audio-Visual equipment and consultation for instructional and other University related purposes. This equipment is located in each of the Colleges in areas designated as Media Labs. The college Media labs are designed to provide "Hands On" access to display and Mini-Production Audio, Video and mixed Media equipment on a University wide scheduled basis. In addition, adjoining college language laboratories are available for use in conjunction with foreign language courses. The tapes used in laboratory sessions are closely correlated with classroom studies and many are produced within the university media center.

The UMB media center, located in the university library, is a sophisticated media production facility. The center is equipped with a color TV studio with computer editing capability; a multi-track audio studio; and associated graphic production space. The media center is designed to produce high quality software for use within the University and for outside educational and community distribution. In addition, the media center in collaboration with individual academic departments and activity centers offers media related courses and workshops through its staff and other production resources.

#### BOOKSTORE

Located in the Administration Building, the Bookstore carries all textbooks required for courses plus a complete line of art and school supplies, and gift items. Also carried is a selection of paperbacks. Special orders can be made for almost any other book in print.

Bookstore hours are 9 a.m. to 5 p.m., Monday - Friday, when school is in session.

#### CLASSIFICATIONS OF STUDENTS

##### I. Degree Students

Full-time students: All students carrying 3 courses of 4 or more credits each or 12 or more credits are accepted as degree candidates and assigned to a graduating class.

Non-classified Degree Students: Students who are admitted to degree status on the same basis as full-time students, but with the expectation of only part-time pursuit of the degree, are considered non-classified students. They are given a classification of "NC". For their initial enrollment they are classified as freshmen or transfers by the admissions office. They are assigned to an advisor for appropriate counseling and advance registration advising.

##### II. Non Degree Students

Special Students: A transient student accepted for courses on a non-continuing basis is assigned to this category. Class designation is "Sp".

#### COLLEGE PREPARATORY PROGRAM

The Pre-freshman programs provide opportunities for students of varied backgrounds to prepare for admission and ultimately enter the University as regularly enrolled freshmen. The students often do not possess the typical college preparatory training or orientation and therefore require some special work prior to enrollment. These programs are available without charge to students who qualify.

The college preparatory program works with low-income high school students with inadequate academic backgrounds to prepare them for admission to the University. Ordinarily students enter the program during their sophomore or junior year of high school. Financial eligibility is set by the guidelines of Upward Bound which provides most of the funds for the program. In general, students are accepted who show strong motivation and academic promise but have performed unevenly or have been enrolled in business or trade curricula in high school. Students attend a six-week residential summer session in Amherst, Mass. During the winter evening classes are offered at the University to supplement the student's normal high school curriculum. Upon successful completion of their work in the program, students are accepted for admission to the University of Massachusetts at Boston. Applications can be obtained from the college preparatory program.

The Veterans Educational Training Program works with recent veterans of the armed services who do not have the traditional college preparatory background but who are considered good candidates for college admission. The program offers full time preparatory courses concentrating on basic Math and English skills, personal counseling, and orientation to college study. Qualified students may be enrolled in up to two regular university courses with tutorial assistance provided by the program. Successful completion of the program leads to regular enrollment as a freshman. Participants are eligible for V.A. benefits while enrolled in the program. Applications may be obtained from the Vet program or the University admissions office.

The University Studies Program for high school students is intended to give college bound students who are academically prepared to do so an opportunity to go beyond their high school curriculum in some area of student. Each student will enroll in one class at the university as an auditor, with the option of petitioning for credit should he subsequently matriculate here. Each student's work will be graded and evaluated as if he were a regular University student. The office of the Director of Pre-freshman programs will maintain communication with each student's instructor regarding his performance and will report his progress to his high school after mid-term examinations and at the end of the course.

Students will be required to show during the application procedure that they have the necessary academic skills to succeed in the course they intend to take. They will also need to show that their schedule will permit adequate study time to complete the work in the course they will be taking. Admission to any particular course is conditional upon the availability of space in that course. Since the University has classes in the late afternoon, students may choose to enroll either through the flexible campus plan in their high school, or outside of their normal high school curriculum. Although outstanding work done in a University course may be weighed with other factors in determining a student's appropriateness for admission to the University, admission to the University Studies Program does not guarantee nor imply admission to the University itself, application for which should be made directly through the Admissions Office. Applications for the University Studies Program may be obtained from the University Admissions Office your high school guidance counselor, or the office of pre-freshman programs.

#### FINANCIAL AID

Financial aid at the University of Massachusetts at Boston is awarded to those students who cannot provide the full cost of their college education through their own and their families reasonable efforts. The term "Financial Aid" is used to include scholarships, granted long term loans and part-time employment.

Applications for financial aid should be filed at the same time as the application for admission. The filing of an application for financial aid will have no influence on the decision for admission.

All awards are made on an academic year basis only. A student must apply each year for any type of aid for the following year.

#### Massachusetts State Scholarships

The Board of Higher Education awards scholarships to students who attend the University of Massachusetts at Boston. All students who apply for aid to the University should also apply for a Massachusetts State Scholarship. Applications are available at secondary school guidance offices or at the Board of Higher Education Scholarship Office, 182 Tremont Street, Boston, MA 02111. The application deadline is December 15, 1976, and Parent's Confidential Statements should be filed with College Scholarship Service by March 1, 1977.

#### University Scholarships

University Scholarships are available for residents of Massachusetts. Only those students in the top 10-25 percent of their class with above average performance on the College Entrance Examination Board examinations and need financial aid will be considered.

#### ITW Scholarships

ITW, Local No. 1 scholarships are tuition scholarships for sons and daughters of former members of Local No. 1 of the International Brotherhood of Telephone Workers. Half of the awards will be made to freshman applicants. Further information and special applications should be requested from the Financial Aid Office.

#### Basic Educational Opportunity Grant BEOG

The Basic Educational Opportunity Grant Program (BEOG) is a new federal financial aid program. The maximum award under this program is \$1400 minus the amount you and your family are expected to contribute to the cost of your education. This award may be reduced further depending on the funds available and/or the cost of attending college since BEOG cannot exceed half the cost of education.

All students should apply for this form of financial aid. Applications and information will be available in high schools, post offices, and state employment offices. Applications are sent directly to American College Testing--BEOG, Iowa City, Iowa, 52240.

#### SUPPLEMENTAL EDUCATION OPPORTUNITY GRANTS

Education Opportunity Grants are gift awards given to academically promising students in accordance with special requirements set by the Higher Education Act of 1965. These grants are designed especially for students of exceptional financial need.

#### LOANS

The major sources for loans are the National Direct Student Loan Fund and Federally supported State Guaranteed Loan Programs.

- A. National Direct Students Loans are available through federal funds received by the University. Federal legislation permits students needing money to borrow up to \$1,000 per year for five years. The actual amount of the loan is determined by the student's needs and by the amount of federal funds made available to the University. No interest is charged on loans until repayment begins. The repayment period starts nine months after the student ends his studies, and

may be extended over a 10-year period at an interest charge of 3 percent on the unpaid balance. Repayment of capital and interest may be deferred up to a total of three years while a borrower is serving in the Armed Forces, with the Peace Corps, or as Volunteer in Service to America (VISTA). Also, no payments are required so long as the student remains at least a half-time student at the undergraduate level. There are provisions for cancelling all or part of this loan if the student enters the teaching profession.

- B. Students may apply for loans under the guaranteed loan program in their home states. This program, established by the Higher Education Act of 1965 varies from state to state. Generally, undergraduate students may borrow up to \$1,500 per academic year with a total maximum of \$7,500, while a graduate student may borrow up to \$1,500 per academic year; the total sum of \$7,500 for one student's undergraduate and graduate study may not be exceeded. Commercial banks, Mutual Savings Banks, Savings and Loan Associations, Credit Unions and other financial institutions subject to federal or state supervision may be lenders under this program. A student should make application directly to one of these participating institutions, preferably to one located in the city or town of his permanent residence. The University is asked to certify the enrollment and good academic standing of the student, the reasonableness of his college expenses, and the amount of financial aid available from sources other than his family. These loans are considered a part of the financial aid package.

As of March 1, 1974, the student must submit an application supplement if he wishes to apply for a subsidized loan, i.e., no interest payments until after he graduates. This supplement provides for the University to recommend to the Bank the amount of the loan, in general, this recommended amount will be the subsidized loan amount. Nine months after the student graduates or leaves school he begins repayment of the loan along with 7 1/2 percent interest. Payment may be deferred for Graduate Studies, Armed Forces or Peace Corps/VISTA. Repayment is arranged with the bank from one to ten years.

#### PART TIME EMPLOYMENT

Part time employment is available mainly through the Collegework study program. Part of which is supported by the Federal Work Study Program, and will be given as part of the Financial Aid Package. Students are paid weekly for the hours they have worked.

#### APPLICATION PROCEDURE

- A. Pre-Freshmen applicants should submit to the Financial Aid Office the financial aid application included with the admission application. In addition, applicants should obtain from their schools' guidance office a copy of the Parents' Confidential Statement prepared by the College Scholarship Service. That statement should be mailed directly to the service at the time the student applies for admission, but no later than April 1. The University of Massachusetts at Boston should be listed under item 13.

- B. Transfer and upper class students should obtain applications and Parents' Confidential Statements from the Financial Aid Office.

Applications are due by April 1.

Transfer students who received financial aid from the school which they are transferring, should request the Financial Aid Office at that school to send a record of their awards to the University Financial Aid Office.

#### AWARDS

The amount of awards is determined by degree of need and may range from \$100 to full cost of attending school. A fuller explanation or determination of need is available in the Financial Aid Office.

Announcement of awards will be made by means of an award letter as soon as possible following the applicants' acceptance by the University. Further communication with the Financial Aid Office is unnecessary, as each applicant will receive an answer as soon as a decision has been made.



#### UNIVERSITY HEALTH SERVICE

The Health Service at UMass/Boston has as its primary objective the well-being of the student population on campus. The program is student-oriented and the services are designed to be as meaningful as possible for the student. They are geared to deal with acute short-term medical problems and to help minimize loss of student time and energy from educational pursuits for reasons of health. Students with problems that must be followed on a long-term or continuing basis or with problems that can be managed only with resources not available in the Health Service are referred to appropriate practitioners and health care facilities in the local community.

The main Health Service facilities are located on campus on the second floor of the Administration Building; a satellite facility is located off campus on the mezzanine floor of the College III facility at 100 Arlington Street. In the course of a week ten clinics are held at both sites--on campus there are morning clinics from 9 AM to 1 PM and afternoon clinics from 1 PM to 4:30 PM; at the Arlington Street site, there are clinics each day from 11 AM to 3 PM and from 3 PM to 6:30 PM.

Every clinic held on campus is covered by at least two registered nurses and a primary care physician (internist or surgeon). At 100 Arlington Street one nurse attends every clinic and a physician attends periodically. It is normal procedure to have all patients seen first by a nurse and then, if necessary, by a physician on an appointment basis. Gynecologic services are provided on campus by a specially trained nurse available daily and a Gynecologist who covers three clinics a week. A psychiatrist is available on campus one day a week and arrangements for the services of other specialists are made when necessary on a referral basis. Limited laboratory services are provided on campus.

It is a requirement of the University that every student send to the Health Service a completed physical examination and medical history form before registration so that the Health Service is made aware of any pre-existing medical problems which either require medical care or might necessitate a modification of the student's academic or athletic program. All medical records are held in strictest confidence by the University Health Service.

The Health Service program is supported by the Health Service Trust Fund constituted by the Health Fees which all students are required to pay. Students are urged to enroll in a health plan offered by the University which provides substantial coverage for services which are not provided by the Health Service. The plan entitles a student to extensive but not total hospital services, in-patient physician's care, out-patient surgical care, emergency room services, referrals to specialty consultants, x-ray and laboratory procedures, etc. A full description is available at the University Health Service office.

The Human Sexuality Center and the Center for Alternatives are important outreach programs of the Health Service. Each Center is directed by a full-time member of the Health Service's Mental Health team assisted by a group of 13 peer counselors who go through intensive and continuous in-service training. The services offered by the Centers include providing free literature, films and forms on all aspects of sex and health care education, support groups, personal counseling and referrals. The Centers are located in the College II facility and are open daily from 9 AM to 5 PM.

The other members of the Mental Health staff consisting of one full-time psychologist (director of the total mental health program), one part-time psychologist and the part-time psychiatrist are located in the main Health Service area. The mental health program, like the medical services, has been designed to provide short-term counseling and therapeutic services; it has ready sources of referral for anyone needing to be followed over a longer period of time.

The Health Service is currently developing environmental health and safety and health education programs. It is periodically sponsoring emergency medical service training programs.

#### HOUSING AND TRANSPORTATION

The Housing/Transportation office is located on the third floor in the Administration Building. The WFO functions as the campus resource center for matters related to Housing and Transportation. The staff is prepared to provide the following services for University students, faculty and staff.

#### TRANSPORTATION

- Directions to campus by public transit
- Directions to campus by automobile
- Parking procedures and regulations
- Shuttle bus schedules
- MBTA bus schedules
- Car pooling services/information

#### HOUSING

- Apartments, houses for rent or sale
- Apartments needed
- Room-mates needed
- Tenants' rights information
- Lease Terminology information

#### LIBRARY

The University Library holds a book collection numbering approximately 225,000 volumes, and currently receives more than 2500 domestic and foreign journals and newspapers. It also has a growing collection of government documents, and a fine art and music library with listening carrels. A Science Library is located on two floors within the science building, and contains the collections in Biology, Chemistry, Mathematics and Physics. There is also a small, specifically designed collection for the students and faculty of College III in the library on the mezzanine at 100 Arlington St.

The main library is centrally located on the Plaza and easily accessible from the bridge which connects all the buildings on campus. Its physical arrangements include comfortable study environments of several descriptions: carrels, tables, and a few small rooms in which a group of students may study together. Its public catalog holds a record for every book in all the University libraries. The resources of the three libraries work together to support the teaching programs of the University at every level.

#### OFFICE OF STUDENT AFFAIRS

In addition to the Office of the Vice Chancellor for Student Affairs, the following departments provide specialized services to students:

- Student Support Services
  - Vocational Counseling and Placement
  - Advising: Foreign Students, Spanish-Speaking Students, Veterans, Pre-Graduate School Students
  - Handicapped Student Center
  - Testing
- Program Development
  - Pre-Freshman Programs
  - Financial Aid
  - Athletics and Recreation
  - Health Services
    - Center for Alternatives
    - Human Sexuality Center
  - Child Care Center
  - Associate Deans for Student Affairs (in each College)
  - Academic Advisors (in each College)
  - Student Activities



Through the Student Affairs Committee several student committees and organizations provide opportunities for pursuing specific extra-curricular interests. There are four main subcommittees of the SAC: Cultural Events, Community Action, Recognized Student Organizations (RSO's) and Media Publications. Some of the organizations are: Art Club, Asian-American Society, Community Volunteer Tutors, Heilene Culture Club, Hispanic Culture Club, International Students Organization, Mass Media, Newman Apostolate, PIRG, Playwright Club, Polish Club, Psychology Club, Puerto Rican Society, Small Claims Court Advisory Service, Sociology Club, Student Drama Company, Third World Spectrum, UMB Christian Fellowship, UMB United Farmworkers, Young Socialist Alliance and WUMB.

#### TUITION, FEES AND EXPENSES

As a State Institution, the University of Massachusetts at Boston offers a low rate of tuition to all students entering from the Commonwealth. Eligibility for admission under the low residential rate is determined in accordance with the following policy established by the Board of Trustees.

These rules and regulations shall apply to the classification of students at the University of Massachusetts as Massachusetts or non-Massachusetts students for tuition purposes.

#### SECTION 1. Definitions

- (1) Academic Period - A term or semester in an academic year or a summer session, as prescribed by the Board of Trustees or under their authority.
- (2) Continuous Attendance - Enrollment at the University for the normal academic year in each calendar year, or the appropriate portion or portions of such academic year as prescribed by the Board of Trustees or under their authority.
- (3) Domicile - A person's true, fixed and permanent home and place of habitation, where he intends to remain permanently or for an indefinite time.
- (4) Emancipated Person - A person (a) who has attained the age of 18 years, or (b) if under 18 years of age, whose parents have entirely surrendered the right to the care, custody and earnings, of such person and who no longer are under any legal obligation to support or maintain such person, or (c) a person who has no parent. If none of the aforesaid definitions apply, said person shall be deemed and "Unemancipated Person".
- (5) His - Shall apply to the female as well as the male gender.
- (6) Parent - With respect to a person (in the case of an adopted person, inserting the adjective "adoptive" before the words "Father" and "Mother" wherever used):
  - (a) The person's father;
  - (b) If the person's father dies, either the legal guardian or if no legal guardian is appointed, the person's mother;
  - (c) If neither the father nor mother is living and no legal guardian is appointed, the person who then stands in "loco parentis" to the person;
  - (d) If the father and mother are divorced, the person to whom legal custody of the person is awarded;
  - (e) If the father and mother are divorced, separated or unmarried and legal custody has not been awarded, the father or the mother as the case may be, with whom the person lives or, if he lives with neither and the father is living, the father.
- (7) Residence - A place of habitation

#### SECTION 2. Rules of Determination of Domicile

- (1) Domicile is not acquired by mere physical presence in Massachusetts while the person is carrying on a course of study at the University or while the person is engaged in employment for a specified term unless Massachusetts is otherwise the domicile of the person.
- (2) Domicile at birth may be changed thereafter by action of the parent in the case of an unemancipated person or by action of the person himself in the case of an emancipated person.
- (3) A person claiming Massachusetts as his domicile shall furnish evidence to support such claim. The burden of proof in all cases is upon the person making the claim. The following shall be of probative value, although not necessarily conclusive, in support of a claim of domicile within Massachusetts:
  - (a) Birth certificate
  - (b) Motor vehicle registration and/or operator's license
  - (c) Voting or registration for voting
  - (d) Certified copies of federal and state income tax returns
  - (e) Property ownership
  - (f) Continuous physical presence in Massachusetts during periods when not enrolled as a student
  - (g) Permanent employment in a position not normally filled by a student
  - (h) Reliance on Massachusetts sources for financial support
  - (i) Former domicile in Massachusetts and maintenance of significant connections therein while absent
  - (j) Domicile of parent within Massachusetts

Evidence submitted in support of an assertion of domicile or of parental relationship shall be in such form as the Treasurer of the University or his designee may require. Copies of official records or documents shall be authenticated by a proper officer. Assertions of fact made other than by an authenticated copy of an official record shall be certified as to accuracy and completeness by the person submitting the same.

#### SECTION 3. Proof of Parental Relationship

A person asserting that he is an emancipated person shall furnish evidence to support such assertion. Such evidence may include:

- (a) Birth certificate or any other legal document that shows place and date of birth
- (b) Legal guardianship papers court appointment and termination must be submitted
- (c) Statement of the person, his parent (s), guardian(s), or others certifying no financial support
- (d) Certified copies of federal and state income tax returns filed by the person and his parent (s)
- (e) Where none of the foregoing can be provided, an affidavit of the emancipated person in explanation thereof and stating fully the grounds supporting the claim of emancipation.

#### SECTION 4. Rules for Classification

- (1) Every emancipated person applying for admission to the University who has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the date of his application and has established a domicile in Massachusetts
- (2) Every unemancipated person applying for admission to the University, whose parent has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the date of application and has established a domicile in Massachusetts, shall be eligible for classification as a Massachusetts student for tuition purposes.
- (3) Every emancipated person seeking a change in classification who has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the beginning date of the academic period for which he registers and has established a domicile in Massachusetts shall be eligible for classification as a Massachusetts student for tuition purposes for such academic period.

- (4) Every unemancipated person seeking a change in classification, whose parent has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the beginning date of the academic period for which the person registers and has established a domicile in Massachusetts, shall be eligible for classification as a Massachusetts student for tuition purposes for each academic period.
- (5) A person having his domicile elsewhere than in Massachusetts shall not be eligible for classification as a Massachusetts student for tuition purposes except as herein provided.
- (6) Any person who is registered at the University as a Massachusetts student shall be eligible for continued classification as a Massachusetts student for tuition purposes (until attainment of the degree for which he is then enrolled) during continuous attendance at such institution.
- (7) A member of the armed forces of the United States and his spouse and unemancipated children shall, while he is on active duty and stationed in the Commonwealth of Massachusetts, be eligible for classification as Massachusetts students for tuition purposes.

#### Section 5. Change in Classification

No application for change to classification as a Massachusetts student for tuition purposes submitted later than the first day of classes shall affect a classification during the then current academic period.

#### Section 6. Penalty for Misrepresentation

Misrepresentation in or omission from any evidence submitted of any fact which if correctly or completely stated would be grounds to deny classification as a Massachusetts student for tuition purposes shall be cause for exclusion or expulsion from or other disciplinary action by the University.

#### Section 7. Appeals

Appeal from a determination denying classification as a Massachusetts student shall be initiated by filing a tuition classification appeal form with the treasurer of the University at the Amherst Campus.

#### Section 8. Miscellaneous

Nothing contained herein shall be construed as limiting or prohibiting the authority of the Board of Trustees to waive or reduce tuition charges.

#### EXPENSES

NOTE: All students are full-time unless they change their status at Advance Registration.

#### FULL TIME STUDENTS

Normally expenses vary from approximately \$600 to \$700 per year for full time students. The following estimate of a year's expenses for full time students includes only those items which are strictly college-related. Tuition for Massachusetts students is \$345 per year and for others \$1,550.

|                                                                   |               |
|-------------------------------------------------------------------|---------------|
| *Tuition.....                                                     | \$ 345*       |
| Student activities fee .....                                      | 30*           |
| Health services fee .....                                         | 44            |
| *Student Medical/Surgical Ins. (12mos. coverage optional) .....   | 40            |
| Mass. Public interest research group (optional) .....             | 4             |
| Books, stationery, laboratory and other supplies (estimate) ..... | 200           |
|                                                                   | <u>\$ 663</u> |

\*Subject to change

No provision is made for room and board expenses as the University of Massachusetts at Boston is non-residential.

#### PART TIME STUDENTS

Students classified as MC, PG, or SP are part time students and will be billed by the credit after the Add/Drop period at the following rate:

|                                                                                                               |                             |                                                       |
|---------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------------------|
| Massachusetts                                                                                                 | Students                    | All Others                                            |
| Tuition per credit.....                                                                                       | 16.10 Pa.....18.40 Sp ..... | 77.50                                                 |
| Students classified as CM are part time graduate students who are billed by the credit at the following rate. |                             |                                                       |
| Massachusetts                                                                                                 | Students                    | All Others                                            |
| Tuition per credit.....                                                                                       | 23.60Pa.....25.80Sp.....    | 48.20Pa.....54.20Sp                                   |
| All part time students are billed at a reduced student activities fee of \$10.00                              |                             | and the optional \$2.00 Mass Pirg Charge/per semester |

#### Initial Payment for Freshmen

The initial payment for first semester expenses required for freshmen and transfer students prior to Fall Registration, and other expenses reasonably expected, are indicated below:

|                                                                               |        |        |
|-------------------------------------------------------------------------------|--------|--------|
| *Tuition.....                                                                 | \$ 161 | \$ 775 |
| Less credit for matriculation fee (non refundable).....                       | (15)   | (15)   |
| Net Tuition .....                                                             | 146    | 760    |
| Student Activities .....                                                      | 15*    | 15*    |
| Health Services Fee .....                                                     | 22*    | 22*    |
| Student Medical/Surgical Ins. 12 mos. coverage (Optional) .....               | 40     | 40     |
| Mass Pirg (Optional) .....                                                    | 2      | 2      |
| Application and orientation fees (paid upon acceptance) (non refundable)..... | 25     | 40     |
| Total of first semester student fee bill.....                                 | 250    | 879    |
| Books, stationery, laboratory and other supplies (estimate).....              | 100    | 100    |
| Total .....                                                                   | 350    | 979    |

The figures for books, stationery, etc., are approximate; they vary depending upon courses chosen and individual needs. Students should be prepared to pay cash for books and incidental supplies. Certain departments make special charges for necessary laboratory supplies. A bill will be rendered to the parent of each student or to the student directly prior to the beginning of the semester.

\* All fees subject to change

#### STUDENT ACTIVITIES FEE

This is a mandatory fee set by the Board of Trustees. It is used to support programs and activities beneficial to students, such as the recognized student organizations and the University Cultural events committee.

#### STUDENT HEALTH FEE

This is a mandatory fee for all full time students set by the Board of Trustees used to support the University Health Services and its programs.

#### MEDICAL/SURGICAL INSURANCE

An optional plan providing hospital, medical, and surgical care on a twelve months basis for injuries or illness during the school year, holidays, and summer vacation. Students who register for the fall semester have only one opportunity to enter this program each year, at the time of payment of the fall semester bill. It is also offered on the spring semester bill for new spring registrants only. Dependents of married students are not covered under this plan. Coverage for dependents is available at additional cost. Inquire at the University Health Services.



#### PAYMENT DUE DATES

In accordance with University policy all charges for tuition and fees are due and payable approximately 21 days prior to the date of registration of each semester. Bills will be rendered in advance with due date shown and should be returned with the proper payment to the Bursar's Office, University of Massachusetts at Boston, Boston, Mass 02125. Students may not register until all University charges are paid or otherwise accounted for. If scholarship students do not wish to pay the optional fees, they must notify the Bursar's Office when clearing their bill prior to the start of the semester.

#### SCHOLARSHIP PAYMENTS

It is the responsibility of all scholarship holders to see that the University is adequately notified prior to the time fee bills are prepared. Known scholarships are shown on the fee bills. If such items are not shown, deductions may not be made from the bill until satisfactory evidence has been presented to the Bursar of the University by the donor.

#### LATE PAYMENT

Any student who does not make payment of his semester charges by the date specified may be required to pay a late payment fee of \$5.00.

#### TUITION AND FEE REFUNDS

A student who leaves the University for any reason, except as specified below, before a semester is completed will be granted a pro rata refund of tuition and fees. Upon completion of a withdrawal form from the Dean's Office of their respective college a student who makes an advance payment and then for any reason does not attend any part of the next semester or term at the University will be given a full refund of tuition and fees. The \$5 admission (matriculation) payment and the \$15 orientation payment required of new students are not refundable. A student called into military service before completion of a semester will be given a pro rata refund of tuition and fees provided that he receives no academic credit for the work of that semester. If academic credit is given, there will be no refund. A student who is suspended or expelled from the University for disciplinary reasons forfeits all rights to a refund.

#### REFUND SCHEDULE

##### Regular Term

- A. Within the first two weeks from the beginning of semester or term.....80%
- B. During the third week .....60
- C. During the fourth week.....40
- D. During the fifth week.....20
- E. After the fifth week.....no refund

Refunds are based upon the withdrawal date established by the Registrar.

#### VETERANS

Any veteran whose service is credited to the Commonwealth of Massachusetts (i.e., entered the service in Massachusetts), and who has served 180 days active duty since February 1955, is eligible to attend the University tuition free. Instructions relative to the procedure to obtain this tuition waiver are available at the office of Veterans' Affairs. This tuition waiver covers a period of four years, but must be renewed each year. Summer school attendance must have a renewal of the tuition waiver, but is not charged as a renewal if the courses taken in summer school are required for a degree.

Information concerning veterans status and payments under federal and state laws is available at the office of Veterans' Affairs.

#### Responsibility for any change in Status Rests with the Veteran

Any change in a veterans' status while attending the University in relation to semester hour credits, marriage, dependents or withdrawal should be reported immediately to the office of veterans' affairs.

#### Veterans' Educational Training Program

Veterans who feel that they need to improve their skills before entering the University on a full time basis may apply for admission to the Vet Program. Funded by the U.S. Office of Education, this program offers classes and counseling which help the veteran make a smooth transition between military life or long absence from formal schooling to the life of a student. Courses are offered in English Composition, Mathematics, Literature and Social Sciences on a non-credit basis. However, students in the program may substitute up to two credit courses in the University for two non-credit courses. In addition, they may receive vocational, educational and personal counseling.

The State Department of Education recognizes students in the program as eligible for GI benefits.

#### VOCATIONAL COUNSELING AND PLACEMENT

The services of the Vocational Counseling and Placement Office of the University are available to registered students and alumni.

The principal services provided are:

- Vocational Counseling--Individual and Group
- Comprehensive Vocational and Educational Informational Resource Center
- Placement Assistance--Off Campus, Part-time, Summer, Full-time Career

- A. Updated job market information
- B. Resume preparation
- C. Interviewing skills and techniques
- D. Job campaign planning
- E. Assistance in establishing direct contact with area and national employers

- Special career education programs- seminars, workshops, lectures, field visits, volunteer field placements
- Consultation services to the Colleges

All students, regardless of year in school, are encouraged to visit with a staff member in the Office of Vocational Counseling and Placement and to share with counselors emerging concerns and questions relevant to their future plans.

#### THE COLLEGES OF THE UNIVERSITY

Colleges I and II are Liberal Arts colleges and constitute the major part of the University of Massachusetts at Boston. Each college provides students with both traditional and innovative ways of studying the principal academic subjects and disciplines. Both colleges encourage students to acquire those skills and interests which will make learning a life-long process. A merger of the colleges is now under consideration. However, the educational thrust of the existing programs will be maintained.

The college of Public and Community Service (CPCS), or College III, is a new college offering a competency based curriculum which combines liberal arts with professional training for students interested in a range of public and community service careers. Emphasis is placed on interdisciplinary instruction and field work. The B.A. degree is awarded upon demonstration of individual competence rather than the accumulation of course credits. The major focus of the college is on contemporary urban problems. The college is conveniently located at the downtown campus in the Park Square area of Boston.



The college of Professional Studies is a new college of the university which will offer career-oriented education in a variety of fields. In September 1975 the college began a program in Management designed to prepare students for careers in business or government and for further education in these fields.

#### COLLEGE I

College I is committed to a pattern of education that begins in the student's exploration of a range of different ways of thinking and knowing. Students take a variety of courses combining experience of the course material with training in the basic skills appropriate to academic inquiry concerning that subject. In addition, College I offers several interdisciplinary freshman courses designed to serve as introductions to college study. These courses are team-taught by members of different departments. They carry double the academic credit of normal courses, and they are focused on topics of broad significance and basic human concern. Among such courses that have been offered by College I are courses in "Law and Justice", in "The Phenomenon of Language", in "Learning and Schooling", and in "Industrial Society".

As part of this pattern of exploration and breadth in education, College I requires its students to take, in addition to two semesters of freshman writing, twelve semester length courses that are distributed over six subject areas, with no more than three courses in one area counting toward the total of twelve. The six core distribution areas are A) Historical and Cultural Studies; B) Foreign Languages; C) Philosophy, the Arts, and Music; D) Mathematics, Computer Languages, and Statistics; E) Natural Sciences; F) Social and Behavioral Sciences. The College also provides an "Option B" program under which students may present for approval by a faculty advisor a program or course which the student wishes to adopt in place of the college's core requirements.

The purpose of the exploratory phase of education in College I is to allow its students to acquaint themselves with the complexity and range of academic inquiry and discourse, to establish the intellectual basis on which they can organize their educational experience, and to develop some of the basic and more specialized skills helpful to the pursuit of their educational goals. This exploratory process is followed by a more concentrated major program through which the student seeks to develop further understanding and competence in at least one intellectual discipline to the degree of relative comprehensiveness and self-initiative or intellectual independence. College I provides majors in seventeen concentrations. These include concentrations in Law and Justice, American Civilization, Bio-Behavioral Studies, Asian Studies, and Latin-American Studies. Students interested in majoring in Italian, Philosophy, and Music should note that these majors are offered only in College I.

College I does not seek to train students for specific vocational possibilities but to encourage and help them to develop and intellectual independence and self-reliance based on experience in a range of intellectual styles and methods and on concentration in one of these academic areas. Thus, it is directed at the development of intellectual flexibility and of resourcefulness in the solution of intellectual problems, and it asks the student to develop intellectual breadth and to complete a departmental major at the same time as it recognizes the important role of the individual student as the central and final agent of his own education.

College I welcomes visits from prospective students and warmly encourages applicants for admission to seek an interview with a member of the College staff or faculty. Interviews can be arranged through the Dean's Office of College I.

#### COLLEGE II

College II continues to develop programs within a framework of traditional liberal arts involving the disciplines of the Humanities, Sciences, and the Social Sciences, which allow students to combine the benefits of departmental specialization with those of interdisciplinary study. By exploring new modes of inquiry within and outside the historical traditions of western culture, college II offers options of synthesis and innovation permitting discovery of new ways to improve the quality of our lives, both as individuals and as a community.

College II continues to develop significant areas of academic interest not available in other colleges of the University. Such distinctive programs of study, however, complement rather than replace the more traditional major programs offered by each of the academic departments in the college, thereby providing a broader conjunction of opportunities for students.

The Urban Studies Concentration provides opportunities for the investigation of urban issues and problems from the perspective of various disciplines--Sociology, History, Economics, and Art. An interdisciplinary study of western and non-western Religions, with courses in the Humanities and Social Sciences, is offered by the program for the Study of Religion. Students enrolled in the individual major program design their own pattern of course selections, in consultation with faculty advisors, drawing upon the resources of two or more academic departments in the college. And, in addition to such interdisciplinary programs, College II houses the only programs in the Visual Arts (including film history) Theatre Arts, Classics, and Russian available at the University. Language instruction is also provided in College II for Portuguese, Polish, Armenian, and Modern Greek, as well as in French and Spanish. Students enrolled in the "Option B" program have an opportunity to modify or develop alternatives to the College's core requirement for graduation.

Through the support of the national endowment for the Humanities, College II is sponsoring an experimental program on Nantucket Island, providing a limited number of advanced undergraduates with opportunities to complete a semester of academic credit while living on the island. By studying the history and culture of this distinctive society with its unique natural environments, students are provided with a "Semester Abroad" without actually leaving the Commonwealth.

Various forms of group and individualized basic skills instruction are available for students needing special help to ensure that they will derive maximum educational benefits from their courses. These forms include an innovative pilot program of regularly scheduled course-adjuncts, involving student tutors working under the direction of faculty and staff members.

Located in the magnificent College II building, designed by the distinguished architectural firm of Cambridge Seven Associates, are a gymnasium, exercise facilities, and squash courts available to students and faculty members in the University.

As part of the orientation of new students, at the beginning of each academic year, the Dean of the College invites parents of incoming students to meet with him, members of his staff, and faculty members in College II Departments.

The College II constitution provides for a student faculty senate responsible for establishing and maintaining the means and standards through which students may earn the Bachelor of Arts Degree in College II, and for coordinating college efforts within the context of general goals relevant to the University-at-large.

#### COLLEGE OF PUBLIC AND COMMUNITY SERVICE (College III)

In October of 1973, the College of Public and Community Service (CPCS), the third College at UMASS Boston, opened with an initial enrollment of about 300 students. Enrollment since then has increased substantially. Adopting innovative approaches to higher education, the College is charged with training a diverse mix of students in careers of public and community service. The curriculum is organized around a competency based certificate system rather than course credits, with emphasis on interdisciplinary instruction and field education. The College, which is housed at the downtown campus in Park Square area at .00 Arlington Street, offers an educational program leading to the B.A. degree. Other professional degrees may be authorized in the future.

Since its beginning, the college has attempted to select a student body whose composition is varied. The students generally reflect a blend of socio-economic background, sex, age, race and ethnic origin, previous educational training, experience, and employment. Special attention is given to recruitment of those who are currently employed in human service work, those who have been out of high school for some period of time and want to return to college, those who have not completed high school but are prepared for college; and those who for whatever reason are often left economically and educationally disadvantaged (such as women and minorities). Sensitive recruitment, selection, and admissions programs--reinforced by college facilities located in downtown Boston near public transportation for its commuting students--have combined to attract a unique cross-section of people.

The College is committed to a competency based curriculum which will allow flexibility for students in planning and scheduling their learning program to best suit individual needs. It offers a wide variety of educational situations in which students learn skills and concepts, and are placed in real work settings where these can be used. Competency can be acquired and demonstrated not only in courses, but also on the job, in field work, and from use of resources in the greater Boston area. Too, students bring competencies already developed through previous work experience.

A special program called "Assessment" is provided for first year students. This program is designed to familiarize students with competency-based education and to aid students in applying previously acquired skills and knowledge to the curriculum and in forming individual learning plans.

Throughout its short existence, the College has identified specific competencies (through consultation with professionals, potential employers community people, and others) in order to define what a student enrolled in a particular curriculum career area needs to know and do, and at what level of skill. Similarly, more general competencies have been developed in liberal arts area and essential skills. These have been drafted into Certificates of Competency.

Each of the certificates describes various competencies required, the performance expected of students, and standards of evaluation to be applied. Further, students can design a certificate in a career area other than the three currently offered, and that competencies outlined in certificates of the career and general learning centers be combined to equal certificates. Also, students may either create competencies or combine existing competencies with competencies of their own design to make up a new certificate. Such individualized certificates must be approved by the academic governing body of the College, the Certificate Council.

To administer the certificate system, the College is organized into seven curriculum centers, each with its own certificate(s): The Essential Skills Center; three general learning centers (Cultural Studies, Individual and Society, Institutions); and three career centers (Housing and Community Development, Human Growth and Development, Legal Education Services). Also, to build a program encompassing field experience education, the college has a Coordinator of Field Education. The Coordinator's mission is to form and monitor a variety of cooperative relationships with service agencies and

organizations in the greater Boston area which provide crucial field work training for students; to assist in developing learning plans for individual students in the field; and to coordinate the college's career development, vocational counseling, and job placement efforts with those of the University.

The B.A. degree will be awarded upon attainment of ten specified certificates: Essential Skills Certificates; five certificates from the General Learning Centers; one Career Area Certificate (equal in value to three general center certificates) and one "Independent Interest" certificate designed by a student in conjunction with the faculty. The two assessment competencies, which are required, may be combined with competencies from the career or general center certificates to equal a general learning center certificate.

A description of the two assessment competencies and the certificates currently available through the Curriculum Centers follows:

#### 1. ASSESSMENT

Two competencies in assessment. They focus generally on helping new students understand the College and its competency-based curriculum, relate their past and present work and learning experience to the certificates, and develop their overall planning skills through design of individual learning plans.

#### 2. ESSENTIAL SKILLS

Three certificates in writing and speaking, reading, and mathematics. The Writing and Speaking Certificate encompasses advocacy, analysis, communication of personal feelings and/or experiences, and communication of technical career knowledge to both a professional and a general audience.

The Reading Certificate deals with the ability to "Pre-Read" a book to determine its value, make use of libraries and other research sources, read materials encountered for the first time, and to comprehend and judge written texts. The Mathematics Certificate includes competencies in basic and business mathematics, algebra, plus statistics.

#### 3. CULTURAL STUDIES (General Center)

Two certificates in American Values and Cultural Comparison. The first requires an understanding of the nature and origins of American value systems and their impact on the individual. The second examines the ability to understand and compare the attitudes and practices of differing socio-cultural groups.

#### 4. INDIVIDUAL AND SOCIETY (General Center)

Three certificates: Communication; Role, Identity, and Group Membership; and Introduction to Small Groups. The theme throughout all three is study of the individual in relation to other people. The Communication Certificate centers around the individual as a sender and receiver of various "messages" and "signals" while dealing with other people. The Role, Identity and Group Membership Certificate addresses the individual as fulfilling various roles (such as worker, parent, student) and as processing certain group memberships (such as sex, class, race or ethnicity). The introduction to Small Groups Certificate focuses on the individual as a member of small groups in which members are psychologically aware of each other's existence and have some face to face interaction.

#### 5. MANAGEMENT AND TRANSFORMATION OF INSTITUTIONS (General Center)

Three certificates in Social Change, Political Economy, and Management. The Social Change Certificate concentrates on community and interest group organization and tactics, research and analytical skills in neighborhood field setting, and electoral politics. The certificate in Political Economy focuses on an analysis of power, political conflict, the economics of families and individuals, American economic institutions and alternatives, local economic data and research, plus traditional economic theory. The Management Certificate covers major areas of public and organizational administration including decision making processes, legal and administrative strategies to change organizational behavior, managerial problem solving, program development, budgeting and grant development.



#### 6. HOUSING AND COMMUNITY DEVELOPMENT (Career Center)

One Career Certificate in Housing, which is divided into three parts. The first comprises certain basic competencies in the housing field including knowledge of terminology and concepts, human needs and the housing environment, different career roles, and the overall housing system. The second part consists of a number of competencies in four professional career areas (advocacy, management, development, and public service in a housing agency). A study is required to earn either those competencies in one of the four areas or competencies drawn from all four. The third part of the certificate deals with a student's ability to work on a concrete housing problem.

#### 7. HUMAN GROWTH AND DEVELOPMENT (Career Center)

One career certificate including general competencies encompassing stages of human development, interviewing and counseling, systems of human service delivery, and the dynamics of families and their functions. The remaining competencies to be earned require work in one of several specialties: early childhood, developmental disabilities, and preparation for graduate school in social work and psychology.

#### 8. LEGAL EDUCATION SERVICES (Career Center)

One career Certificate in Law, which is made up of six parts. The first five parts consists of basic competencies grouped under different areas of study (legal institutions, fact finding methods, legal rules and their use, dispute resolution, and law and values). These competencies stress knowledge of the working of the legal system (the processes of legislating, administering, and adjudication the law) and crucial skills necessary for effective participation in it (interviewing, investigation, legal reasoning, statutory research, negotiation, and advocacy). The sixth part of the certificate allows for a choice of competencies ranging from advanced study of topics introduced in the first five parts to focus on a particular substantive area of the law chosen by a study as possible career field (for example, housing, juvenile, welfare, or criminal law).

#### THE COLLEGE OF PROFESSIONAL STUDIES (COLLEGE IV)

The idea for a college focused on professional education was first developed in the report of a campus-wide planning committee of UMass/Boston in April 1973. The Committee proposed the creation of a new collegiate unit that would offer undergraduate and graduate degree programs in a number of career areas including Management, Urban Technology, Mass Communications, Architecture and Urban Design, and Community Health. The Planning Committee conceived the proposed College as an innovative approach to professional education for several reasons:

- The College would bring together in a single academic unit professional fields normally located in special-purpose schools, thereby maximizing opportunities for joint programs and inter-disciplinary studies.
- The College would be responsible for both the professional and general education of its students, thereby bringing the liberal arts into a more meaningful relationship with career-related studies.
- The College would seek to provide opportunities for persons traditionally underrepresented in professional programs, especially minorities and females.
- In keeping with diversity of its students the College would adopt flexible forms in terms of time, place, and manner of instruction.

The Board of Trustees of the University of Massachusetts reviewed the proposal for the College of Professional Studies in July, 1973, and authorized the campus to initiate a search for a dean who would be charged with organizing the further development of the College. The search took most of the academic year 1973-74; Dr. Richard M. Freeland was appointed the first dean of the College in June, 1974.

During the academic year 1974-75 the Dean and a small staff recruited a faculty for the first program in the College - the Management Program. In the fall of 1975 the College enrolled its first students. In September, 1976 the student body of the College will grow to 500, and for the first time, courses in the Management Program will be offered during evening hours as well as during the morning and afternoon hours. The College hopes that this extended class day will make the Management Program more accessible to those who work during the day and that it will also provide additional schedule options for those students who have usually taken all their coursework during the day. The evening courses offered by the Management Program will be in all ways comparable to those offered at other times of the day. All courses will be taught by the same faculty and the performance expected of students in any given course in the Program will be identical.

Also in September, 1976, the College will begin a cross-registration program with the College of Business Administration at Northeastern University. Through this program, students in the Management Program will be able to register at Northeastern University, at no additional cost. This program represents the first time that a public university and a private university in this area have entered into a contract for services. Though the cross-registration will be limited in the first year, it is an important first step toward inter-institutional cooperation.

#### THE CURRICULUM

As a four-year undergraduate college, the College of Professional Studies is responsible for assuring that its students receive a comprehensive professional education. There are two basic components of the curriculum of the College of Professional Studies, each representing approximately half of an individual student's course work in the College. One part, called the applied component, helps students prepare themselves for careers in a particular professional field, such as Management. The applied component can involve course work in both liberal and applied subjects, but the emphasis is clearly on problem solving within a specified professional field. The second part of the curriculum, the general education component, provides students with an opportunity to prepare themselves broadly to lead informed, sensitive and interesting lives. The general education component can also include course work in liberal and applied subjects, but here the emphasis is upon breadth and general understanding, and most course work will be in the liberal arts and sciences. The two components of the curriculum of the College, though different in emphasis, are mutually reinforcing; the practical problems encountered in the applied component provide opportunities for students to put to practical use ideas and values encountered in their general education; the ideas developed in the general education component provide perspective on the issues and emphases associated with the applied part of the curriculum.

#### THE MANAGEMENT PROGRAM

The Management Program is a course of undergraduate study for persons who wish to prepare for managerial careers in business, government or other institutions. The program leads to a Bachelors Degree in Management. The idea of a program in Management--as distinguished from programs in Business or Public Administration--is relatively new. The University of Massachusetts at Boston, like several other universities in the United States, has developed this type of program because the problems and requirements of managing institutions of all kinds--public and private--have become so similar. Also, it is now common for managers to move back forth between industry and government during their careers. The Management Program, therefore, incorporates the most modern concepts of managerial training and provides students with a versatile preparation for work in the wide variety of institutions.



#### MANAGEMENT PROGRAM: APPLIED COMPONENT

There are four parts to the applied component of the Management Program. Each part represents a stage in a student's overall development as a future manager, and for this reason most students will proceed through the four parts in the order in which they are listed here. The four parts are: Introductory and Skills Courses; the Management Core; the Management Concentration; the Internship. There are requirements associated with each part of the applied component and students will need to complete these requirements satisfactorily before receiving the degree. The formal requirements can be found in the section of this booklet entitled "Academic Regulations" which lists the Degree Requirements for each College.

##### - Introductory and Skills Courses:

The College does not expect most entering students to have clear plans for all four years of college or for their careers. For this reason, the first part of the Management Program emphasizes opportunities to explore professional and academic interests and to build basic intellectual skills. Course work at this level is designed to be useful to students whether they continue on to upper division work in Management or transfer to another program or field. The Applied Component of the Management Program includes three Introductory and Skills Courses. They are:

- Introduction to Management: This course offers students an initial experience with managerial problems and processes and with the Management curriculum. This course is taught by the Management faculty. It should normally be taken in the first semester of the freshman year.
- Statistics: A one semester course in Managerial Statistics will provide students with essential tools for course work later in the program and for future work. This course will normally be taken in the sophomore year.
- Economics: At least one semester of Economics is required of all students. The course can be taken in a liberal arts college and should be completed during the freshman or sophomore years.

#### THE MANAGEMENT CORE

The Management Core is a set of required courses, normally taken during the sophomore and junior years. The purpose of the Core is to introduce students to the major functions performed by all institutions and to the relationships among these functions. The program is intended to help students understand how institutions work and how any specific managerial position relates to a total organization. The core courses also introduce students to the areas of specialization and the career options within Management so that they will have a basis for selecting a field of concentration in the Advanced Program.

The Management Core is divided into four areas:

- Management of Financial Resources: This is a two-semester sequence which studies the means by which institutions obtain, allocate, and keep records about financial resources. The course introduces students to the fields of Accounting, Budgeting, and Financial Management.
- Human Resources Management: In this two-semester sequence, students acquire knowledge and skills related to working with other persons to achieve the purposes of an organization. Topics include the Managerial functions of planning, organizing, directing, and controlling. The sequence serves as an introduction to further study in Personnel and Labor Relations Management.

- Marketing Management in the Public and Private Sectors: This two-semester sequence introduces students to the system of markets and constituent relationships within which organizations operate. The course also studies the means by which organizations react to and act on their external environments. The fields of Marketing and Program Planning are explored.

- Management Science: The Management Core includes a two-semester sequence in Operations Research and Operations Management. The first course develops important skills in quantitative methods and the second applies these skills to such problems as production management, scheduling, service delivery, and inventory control.

#### THE MANAGEMENT CONCENTRATION

The Management Concentration provides students with an opportunity to either specialize in one of the fields studied in the Core course work or to develop their own course of study specifically related to a Management field not represented in the Core. The Concentration is intended to provide students with a limited amount of skill and knowledge in a professional field that will be helpful in beginning employment after graduation. The Concentration consists of several courses, typically 3-5 in number, normally taken during the junior and senior years. In 1975-76 the following Concentrations are available:

- Accounting
- Human Resources Management
- Management Science
- Marketing
- Private Financial Management
- Public Financial Management
- Public Management
- Public Policy Analysis

The specific content and requirements for each of these concentrations can be found in the section of this booklet entitled "Description of Courses" under "Management".

#### THE INTERNSHIP

Because education can happen almost anywhere, not only in a classroom, the final part of the applied component in Management includes an internship, which is an approved full or part time work experience in a business, government agency, educational institution, hospital and other organizations. The purpose of the internship is to introduce management students to a new learning environment. Through an internship in an operating organization, students have unusual opportunities to enhance the knowledge acquired in the classroom, to try out skills and abilities, to gain new perspectives on career goals and academic directions, and to further personal and professional development. The internship, then, is more than just a job. It is a chance for students to appraise and improve their knowledge, skills, and attitudes in the world in which they will be living and working for the rest of their lives.

The typical internship will involve about twelve hours of work per week for an academic semester and earn the student four academic credits, but placements with longer hours and more credits can also be arranged. Each placement is decided individually based on the student's interests, talents, and experiences--moderated by the practical limitations of the job market. Students help to set up their own internships.

Representatives of employing organizations act as field supervisors who assign, advise, and evaluate the student's work activities. The student receives academic and career guidance on the internship from a faculty sponsor who also assigns, supervises, and evaluates academic study to complement the individual work experience. The Office of Field Relations of the College provides overall coordination for the internship experience and facilitates the efforts of participating employers, faculty, and students.

Additional information about the Internship is contained in the booklet The Internship Experience available from the Office of Field Relations.

#### MANAGEMENT PROGRAM: GENERAL EDUCATION COMPONENT

The general education program includes six requirements, each one representative of a basic goal of this part of the College's curriculum. These requirements can be satisfied by many different patterns of course work, so each student will have considerable opportunity to elect the specific courses he or she wishes to take while also satisfying these requirements. In some cases, the same course may be used to satisfy more than one requirement. Except where specified, general education course work may be taken at any point during the students' program. Students are encouraged to mix course work in the applied and general education components during the course of their education.

The six general education requirements for Management students are described in the following paragraphs. Students should consult the section of this booklet entitled "Academic Regulations" to find a formal statement of these requirements and an indication of their applicability to different entering classes.

##### - The Essential Skills Requirement:

This requirement is concerned with the basic skills of thinking and self-expression that underlie intelligent thought and successful activity in any field. To satisfy this requirement each student must achieve a basic mastery in the areas of logical thought, written and oral expression, and quantitative analysis and demonstrate this mastery in each area at a level of proficiency established as a standard by the faculty of the College.

##### - The Fields of Study Requirement:

This requirement is intended to help students understand some of the basic concepts and methods that have been developed by scholars to investigate and understand persons, their institutions, their culture and their physical world. To satisfy this requirement each student must successfully complete at least one course in each of seven fields of study. Students entering the program as freshmen will take a basic course called the Liberal Arts and the World of Work, which is designed to introduce them to several fields in the liberal arts.

The seven fields of study are described in the following paragraphs. None of these fields of study correspond to any single academic discipline. Rather, each represents a specific topic for intellectual examination which may be approached from the perspective of several disciplines. In satisfying the Fields of Study Requirement students may choose to limit their work within each field to a single discipline or approach some or all the fields on an interdisciplinary basis. The following brief paragraphs suggest some of the kinds of courses that might be appropriate within each of the fields of study. More detailed information on appropriate course work is available from the Dean's Office. Individual students will need to work out with their Academic Advisors the specific courses they will take to satisfy these requirements.

**Individual Human Life:** This field is concerned with the intensive examination of the experience of living from the perspective of an individual person. Course work appropriate to this field can be found most readily in the disciplines of Psychology and Literature (particularly courses in the novel). Courses from other fields concerned with the study of individuals (such as History, Classics, Theatre Arts, or Philosophy) would also be applicable depending on the specific emphasis of the course.

**Social Organization:** This field focuses on human behavior in organized groups. Appropriate courses may be concerned with theories and methods of analyzing group behavior and may be found in Sociology, Socio/Psychology, Anthropology or Economics. Another group of appropriate courses are those which analyze specific kinds of human institutions or organizations; such course work can be found in the fields of Government and Politics, Sociology, Economic Institutions, Cultural Anthropology.

**History:** This field is concerned with helping students develop an understanding of the history of the civilization of which they are a part as well as the pervasiveness of historical change in human life. Appropriate course work could come from any field. (Included in History, Art, Literature, Afro-American Studies) which is concerned with the historical development of some aspect of American Civilization or of the American legacy from other cultures.

**Comparative Cultures:** This field focuses a student's attention on civilizations fundamentally different from the one into which the student has been born or socialized. Appropriate course work could come from disciplines (Literature, Art, Music, Philosophy, Architecture) concerned with the culture of another country or people or disciplines (History, Anthropology, Sociology, Economics) studying the history or social organization of another country or people.

**Morals and Values:** One of the most important aspects of any culture or group is the framework of values and beliefs which provides the basis for thought and intellectual activity. This field is concerned with the understanding of systems of values and beliefs that have been developed by civilizations or by individual thinkers. Appropriate course work could come from the fields of Philosophy, Religion, Classics, Literature, History, Psychology.

**Aesthetics:** This field focuses on human efforts to understand and create works of the imagination that are of unusual beauty, harmony, or artistic merit. Appropriate course work could come from the fields of Art, Music, Literature (English or foreign), Classics Theatre Arts.

**Physical World:** This field focuses upon the natural environment which provides the basic context of human life. Course work in Biology, Chemistry, Physics, Astronomy and Mathematics could be appropriate here.

##### - The Special Field of Study Requirement:

This requirement is designed to ask students to achieve a substantial degree of understanding of the methods, theories and content appropriate to at least one of the seven Fields of Study. To satisfy this requirement, each student must successfully complete a minimum of five courses in that field. At least 3 of the 5 courses taken to satisfy this requirement must be above the 200 level. Also, at least 3 of the 5 courses must be from a single academic discipline.

##### - The Problems of Inquiry Requirement:

The Problems of Inquiry Requirement asks students to focus on a set of questions that are of profound importance to any serious thinker. The questions are these: How can I know when a given observation or assertion is true or false? How can I most responsibly formulate statements, observations, judgements about the phenomena that I observe? How can I move beyond mere opinion to a statement that I can validate through the exercise of reason? This requirement asks students to seek answers to these questions in terms of two basically different kinds of problems: the problem of accurate description, and the problem of assigning value.

To complete the Problems of Inquiry Requirement, each student must successfully complete two courses concerned with the problem of accurate description and one course concerned with the problem of assigning value. Students may choose the courses they wish to apply to this requirement from any appropriate course offered by the University. Academic advisors will help students identify courses in different fields that could apply to this requirement. Courses used to satisfy this requirement may also be used to satisfy the Fields of Study Requirement and the Special Field of Study Requirement. The following paragraphs explain the purpose of the three required courses and should help students identify courses appropriate to this requirement.



The Problem of Accurate Description: Much of the work done by scholars and thinkers is basically concerned with describing accurately the phenomena they see in the world around them. Although the phenomena can vary enormously (from the behavior of molecules within a cell to the behavior of voters during an election), an essential intellectual problem remains constant: how can an observer know when a certain explanation of a phenomena is true and when it is not. The academic disciplines have developed different techniques of analysis and standards of proof appropriate to the specific phenomena with which they are concerned. Most of the disciplines, however, rely on one fundamental conception of the most productive and responsible method of inquiry for achieving the goal of accurate description. That basic conception is called the scientific method. The Scientific Method of Inquiry contains the following elements:

- a problem is identified and carefully defined
- relevant data are collected
- an hypothesis is formulated on the basis of the data to explain the problem
- the hypothesis is empirically tested

The first two courses that a student must take to satisfy the Problems of Inquiry Requirement must place a major emphasis upon the development of understanding how to formulate ideas and explanations through the scientific method. One of these courses must employ the rigorous application of the scientific method to quantitatively measurable empirical phenomena in which casual relationships can be determined with relative certainty. (Appropriate courses can be found in the disciplines of Biology, Chemistry, Physics, and to some extent also in Psychology, Sociology, Economics and History). The second course must emphasize the application of the scientific method to problems where measurement is difficult or impossible and where clear causal relationships are extremely difficult to establish. (The most appropriate course work for this part of the requirement can be found in the social sciences, including Economics, Sociology, Anthropology, Psychology, History.

The Problem of Valuing: Through the careful application of the Scientific Method, we can hope only to achieve an accurate description or explanation of some phenomenon. The scientific method cannot tell us what is right or wrong morally. It cannot solve for us the problem of how to value a given act or phenomenon. Thus the problem of assigning value presents a fundamentally different problem than the problem of accurate description.

The final part of the Problems of Inquiry Requirement asks students to successfully complete at least 1 course which emphasizes the problem of making value judgments in a moral sense. (Appropriate course work can be found most readily in the field of Philosophy; courses may also be found in the fields of History and Literature, Classics or Religion).

- The Personal Education Requirement:

Each student must demonstrate a capacity to design and execute a personal program of study. Each student's academic advisor is responsible for working with the student to satisfy this requirement.

#### MANAGEMENT PROGRAM: ELECTIVES

Each student will have a limited number of electives to use as he or she desires. There is no restriction on the nature of these electives.

## SPECIAL PROGRAMS

### AMERICAN CIVILIZATION CONCENTRATION

The American Civilization Concentration offers students the opportunity to study American experience and American culture both from the perspectives of the traditional disciplines and in terms of the interrelationships between those disciplines. The student should major in one of the departments participating in the program, and must take in addition to his departmental requirements six courses, two of them in the Junior Colloquium, two in Humanities departments (Art, History, English, Philosophy, Theatre Arts) and two in the Social Sciences (Anthropology, Economics, Sociology, Psychology, Politics). We urge students to take either History 265-266 or English 252-253 before taking the Junior Colloquium. Students should see the American Civilization advisor before enrolling in the Junior Colloquium. The American Civilization advisor is Professor Seymour Katz, English Department, College I.

### BLACK STUDIES CONCENTRATION/MAJOR

This special program, derived from the University's commitment to offer courses in both Western and Non-Western studies, is specifically designed for students interested in the historical experience, cultural accomplishments, and significant presence of the black man in Africa and the new world. Successful completion of the concentration is formally acknowledged on students' official records.

### COURSE OFFERINGS

Black Studies Honors Seminar

An interdisciplinary seminar for students admitted to Option B (Honors), and a limited number of highly qualified students participating in the Option A program.

Prerequisite: 3.0 overall average and permission of the Black Studies Concentration Committee.

### BLACK STUDIES SENIOR HONORS THESIS

Study in depth of a topic chosen by the student in consultation with an honors advisor, and a paper written with the approval and under the direction of an honors advisor, normally related to work done in the honors seminar. Honors awarded on the basis of performance in the honors seminar, evaluation of the paper by the Black Studies Concentration Committee, and 3.0 overall average.

Prerequisite: Black Studies, and permission of the Black Studies Concentration Committee.

### ADDITIONAL APPROVED COURSE OFFERINGS

Students may petition the Black Studies Concentration Committee for permission to include other relevant courses in their concentration program. In addition a list of inter-institutional Black Studies courses is available from the Registrar. These courses will also be credited toward the concentration.



People and Cultures of Africa  
The Art of Africa  
Urban Problems  
Environmental Problems and Prospects of Black America  
Black Presence in American Literature  
Selected Topics in English  
The Black Soul and the Theatre  
Black French Literature  
Introduction to African Civilization I, II  
Problems in African Civilization  
The Age of Jackson and Lincoln  
Civil War and Reconstruction  
Black History in America  
History of Africa  
Seminar in American History  
African Literature  
Jazz  
Non-Jazz Black Music in America  
Afro-American Experience  
Black Literature in America

Students must major in a department and are trained in its discipline while electing courses which emphasize Afro-American subject matter. Faculty advisers, and members of the Black Studies Concentration Committee, assist students in choosing these courses.

#### Option A

A minimum of six courses from the approved list. At least three of these courses must be taken outside the major department.

#### Option B

Honors Program. A junior/senior year honors program for highly qualified students who present to the Black Studies Concentration Committee a satisfactory proposal for in-depth study of an appropriate subject or problem. Requires two semesters of an interdisciplinary junior seminar, the election of additional course as appropriate and the writing of an Honors Thesis during the senior year which is acceptable to the Committee.

### INSTITUTE FOR LEARNING AND TEACHING

The Institute for Learning and Teaching works with teachers, aides, parents, and administrators to improve the quality of education in urban elementary and secondary schools in the Boston area. It is committed to helping bridge the gap between students' experiences in high school and in the University, and works with University faculty and departments interested in developing academic programs and services responsive to UMB students' needs.

The Institute advocates reforms directed at interested cross-cultural understanding; increased participation by teachers, parents, and students in making educational decisions; increased responsiveness of educational opportunity. All programs are planned cooperatively to meet the particular needs of participants. Some are conducted by the Institute's nine-member staff, others by consultants chosen jointly by participants and staff.

In response to needs resulting from Boston's desegregation process, the Institute has focused its resources on the eighteen schools in District VI (South Boston, Columbia Point, North Dorchester), working jointly with teachers, parents and administrators in these schools to develop, find funding for, and carry out such programs as:

- A District wide parent/teacher Resource Center
- A basic skills tutorial program at South Boston High School
- Training on the use of media and audiovisual equipment for teachers and students
- A Middle School math tutorial involving parents and UMB students
- A program in Cape Verdean language and culture

As part of its commitment to provide connections between the high school and University experience, the Institute has been instrumental in the development and continuation of a UMB-Boston Public Schools secondary program, Another Course to College (ACC) the Pre-college Bilingual program, and the Flexible Campus Program. In addition, a number of programs in schools involve UMB students, giving high and middle school students an opportunity to find out more about college. The Institute continues to provide assistance to UMB's academic support services.

The Institute was founded in 1971 with a three-year grant from the Ford Foundation. It was approved by the University Senate in that year, and by the University Assembly in 1975. It welcomes the participation of students, faculty and staff in its programs.

### Concentration in Law and Justice

The Law and Justice Concentration is an interdisciplinary program with a general liberal-arts focus about the law and how it affects people as they live in the real world. Like other Concentrations in the College, Law and Justice is a supplement to a student's major. Prospective Concentrators should call or drop in to the Law and Justice Office (College I, Room 3/105, Ext. 2632) for further information.

Requirements for the Concentration:

Concentrators will be required to complete at least 23 credits in the program, including:

1. One of the 2 introductory courses in Law and Justice (The 8-credit Freshman "Foundation" Course or the 4-credit Introduction to Law and Justice; if a student opts for the Foundation Course, only 4 of the 8 credits count towards the Concentration).
2. At least 9 credits in the core upper-level offerings, including 3 credits in each of the three core areas: Sources, Limits and Functions of Law; Legal Institutions and Procedures; and Forms of Social Justice and Social Ethics.
3. LAWJUS 108, Program Planning in Law and Justice. This is a 1-credit mini-course in program development.
4. At least 3 credits in the Senior Year Directed Study Seminar.

The remaining credits, up to the 23, may be departmental courses with a Law and Justice theme or focus. Concentrators will be urged to distribute such departmental courses more or less equally among humanities departments and social science departments. Courses used to satisfy a major requirement may, if appropriate, also be used for the Concentration in Law and Justice.

A maximum of 7 credits, including the 1-credit mini-course in Program Planning, may be earned through the Law and Justice Mini-Courses. A maximum of 6 credits may be earned in field-work courses provided that the field work is sponsored by the Law and Justice Program or, if the field work is departmentally based, that the field-work is in a Law and Justice context. All such questions of relatedness are to be determined by the Administrative Committee of the Law and Justice Program.

Already Existing Mini-Courses:

|                                          |                            |
|------------------------------------------|----------------------------|
| Higher Law and the American Constitution | Love & Marriage            |
| The Spanish Inquisition                  | The Legal Profession       |
| Rights                                   | The Marriage Game          |
| The Insanity Plea                        | Sacco & Vanzetti           |
| Employment Discrimination                | Justice & Utopia           |
| Legal Analysis                           | Plato & Justice            |
| Juries                                   | Issues in Justice          |
| Law & Psychology                         | Crime Prevention           |
| Behavior Modification                    | Corrections & Alternatives |
| Cuban Law & Politics                     | Court and Community        |

# Departmentally Based Electives (A Partial Selection):

Philosophy of Law  
Psychology, Psychiatry and the Law  
Sociology of Law  
Law & International Relations  
Medieval Law  
American Detective Novel  
Income Distribution and Law

## Interdisciplinary Courses in Law and Justice:

LAWJUS 101 Foundation Course in Law and Justice  
104 Introduction to Law and Justice  
210 Prisons and Punishment  
220 Social Justice  
230 Law and Social Change  
240 Court and Society  
250 Ownership and the Law  
260 Authority, Liberty & Law  
400 Special Topics  
478 Independent Study  
500 Senior Year Directed Study Seminar  
501 Intern in Foundation Course

## PRE-MEDICAL /HEALTH PROFESSIONS CONCENTRATION

A student interested in one of the health professions, including a medical, dental or veterinary career, may select any of the major fields at UM/H on the basis of interest, ability and suitability.

Students who are interested in a medical career should talk with the pre-medical advisor in the Central Advising Office. A Faculty Committee acts in an advisory capacity to these students and the pre-medical advisor. The Committee also interviews each applicant to medical, dental or veterinary school, ordinarily toward the end of the junior year, oversees the evaluation of each applicant's records. Students are advised to seek out information and assistance from the advisor in planning their academic programs in preparation for medicine and other health programs.

## STUDY OF RELIGION CONCENTRATION

The program in the Study of Religion offers a set of courses which concentrate on the religious dimension of human experience. At the nucleus of the Program is a group of courses directly in the study of religion which focus on the fundamental problems and themes of religious experience. This is supplemented by a variety of departmental course offerings which examine religious aspects of literature, art, history, or institutions, as treated by the social sciences and the humanities. This Program seeks to explore critically the cultural heritage of religious experience in a fashion which enables students to expand their views of human culture and to find the place of their own history and experience within the framework of a liberal and humanistic education.

The Concentration in the Study of Religion is designed for students who wish to pursue the study of religion in a more systematic way. These students will be assisted and advised by the Committee on the Study of Religion in College II which supervises the Program. A student's program of study in the Concentration must be coherent, balanced, and varied. It must provide for a clearly-defined focus and knowledge of a wide range of religious phenomena. Successful completion of the Concentration is formally acknowledged on students' official records.

# A. Courses in the Study of Religion

Study of Religion 109 -- Introduction to Religion: Symbol, Myth, and Ritual  
Study of Religion 122 -- Introduction to Religion: Varieties of Religious Experience  
Study of Religion 133 -- From Fertility Cult to Philosophy  
Study of Religion 231 -- Religions of India  
Study of Religion 232 -- Religions of the Far East  
Study of Religion 241 -- Old Testament, the Religion of Israel and the Ancient Near East  
Study of Religion 242 -- New Testament, Judaism and Hellenistic Religion  
Study of Religion 250 -- Varieties of Mysticism  
Study of Religion 252 -- Sacred Histories and Myth  
Study of Religion 255 -- Religions of the Oppressed  
Study of Religion 264 -- Contemporary Religious Thought  
Study of Religion 273 -- Problems in Religion and Ethics  
Study of Religion 276 -- Religion and Technology  
Study of Religion 478 -- Independent Study

## B. Courses closely related to the Study of Religion

### Approaches to Religion through particular disciplines:

Anthropology 267 -- Anthropology of Religion  
Sociology 339 -- Sociology of Religion  
Philosophy 260 -- Philosophy of Religion

### Religion and Literature:

Classics 112 -- Greek and Roman Myth and Religion  
English 326 -- Milton  
English 442 -- Jewish American Literature  
Humanities 243 -- Mythology and Literature  
Humanities 244 -- Germanic Mythology  
Humanities 260 -- Visionary and Prophetic Modes in Literature  
Humanities 245 -- Fantasy and Utopia  
French 374 -- Catholic Literature from 1800-1930  
Italian 301- 302 -- Dante and the Quattrocento

### Major Religious-cultural Traditions:

History 237 -- Jewish History: Antiquity to the Late Middle Ages  
History 238 -- Jewish History: From the Spanish Expulsion to Modern Statehood  
History 239 -- The Middle East, 622-1517 (Islamic Civilization)  
History 243 -- Problems in African Civilization (Islam in Africa)

## SOCIOLOGY AND URBAN SOCIAL SERVICE (SUSS)

The Sociology and Urban Social Service Concentration (SUSS) is designed for dedicated students who wish, beginning in their sophomore year, to major in sociology as preparation for a youth and family serving career in an urban setting. Students in this program take specially created sections of the sociology course offerings which coordinate their course work with field placement activity. Such students are expected to intern in a variety of social service agencies such as, schools, hospitals, child guidance centers, housing services, family support and other community agencies.

Freshmen interested in applying for the Social Service Concentration should consult with the Chairperson of the Sociology Department or the SUSS Committee Chairperson.



## TEACHER CERTIFICATION PROGRAM

Students seeking careers in education may avail themselves of the services of the Teacher Certification Program. The staff provides information and counseling to all students preparing for teaching careers. In addition, the program enables highly qualified students to satisfy Massachusetts requirements for teacher certification. Since UMass/Boston offers no major in Education, a teaching candidate pursues the University's normal degree and major sequences. At the same time, by judicious choice of electives from among those offered by several departments, one may acquire credits in courses approved for certification. The program culminates in the senior year when, under the direction of the faculty of the major department, the student enters student teaching and participates concurrently in a Curriculum and Methods Seminar.

Specific information concerning certification requirements and approved courses is available in the Teacher Certification Program Office.

### Elementary Education (Prerequisite: Admission to TCP)

Grades K-6

TCH CER 589: Issues in Elementary School Curriculum

TCH CER 590: Curriculum, Methods, Student Teaching in Elementary Schools

### Special Subject Teacher (Prerequisite: Admission to TCP)

Grades K-12

Art 586: Curriculum, Methods, Student Teaching of Art in the Schools

Music 586: Curriculum, Methods, Student Teaching of Music in the Schools

Theatre Arts 586: Curriculum, Methods, Student Teaching of Theatre Arts in the Schools

### Secondary School Teacher (Prerequisite: Admission to TCP)

Grades 7-12

Biology 586: Curriculum, Methods, Student Teaching of Biology in Secondary Schools

Chemistry 586: Curriculum, Methods, Student Teaching of Chemistry in Secondary Schools

Classics 586: Curriculum, Methods, Student Teaching of Latin in Secondary Schools

English 586: Curriculum, Methods, Student Teaching of English in Secondary Schools

French 586: Curriculum, Methods, Student Teaching of French in Secondary Schools

Italian 586: Curriculum, Methods, Student Teaching of Italian in Secondary Schools

Mathematics 586: Curriculum, Methods, Student Teaching of Mathematics in Secondary Schools

Physical Science 586: Curriculum, Methods, Students Teaching of Physical Science in Secondary Schools

Social Science 586: Curriculum, Methods, Students Teaching of Social Science in Secondary Schools

Spanish 586: Curriculum, Methods, Student Teaching of Spanish in Secondary Schools

Students in departments not listed should consult with their departments to determine whether such courses are offered. Not every course is offered every semester or every year; students should consult with their departments regarding departmental offerings.

### LIBRARY COURSES (Prerequisites: Junior Standing or Permission of Instructor)

In cooperation with the Boston Public Schools Library Program, the University offers two courses through the Teacher Certification Program that may be of general and specific interest to prospective teachers. Admission to TCP is not a prerequisite.

TCH CER 211: The Library and the City Child

TCH CER 212: Books and the City Child

## UNIVERSITY YEAR FOR ACTION

University Year for ACTION is a University based program combining full time public or community service/interiorship and two seminars, one in field of major, and one interdisciplinary Urban Studies Seminar. UYA is not open to first semester freshmen.

A student intern/volunteer receives a stipend of \$230.00 per month for twelve months, September through August. The twelve months are divided into three semesters. The student earns a total of thirty credits for the year. Individual departments grant twelve credits for the year's work in the academic seminar. However, UYA credits cannot be substituted for University and major core requirements. The remaining eighteen come from UYA, nine for field work and nine for the Urban Studies Seminar.

### URBAN AFFAIRS CONCENTRATION

The College II Urban Affairs Concentration offers students an opportunity to investigate urban issues and problems from the point of view of several different disciplines. Understanding important issues such as how cities emerged and developed, how they are shaped by an array of forces, and the causes and consequences of urban problems necessarily require that we adopt a comprehensive approach. Therefore, in addition to a major, a student who wishes to have a concentration in urban affairs takes certain courses in economics, history, politics, sociology, and psychology. More information on this concentration and a listing of the approved courses is available from any of the following faculty advisors for the concentration: Profs. Raymond Torro (Pol Economy); Paul Gagnon (History); Diane Paul (Politics); Harry Brill (sociology); Bernard Kramer (Psychology); David Landy (Anthropology).

### WOMEN'S STUDIES CONCENTRATION

Women's Studies at UMass/Boston has grown from a small grouping of departmental courses to an interdisciplinary concentration with more than 30 courses, including its own WOST courses taught by its own staff of two faculty members.

The strong interest in Women's Studies at UMB is based on the commitment of women students, faculty and staff to deepen the analysis of the situation of women in our society.

The objectives of the program are to fill out the social picture of humanity and to question and change the present social organization based on the oppression of women. To this end the Women's Studies Concentration encourages the development of new departmental and interdisciplinary courses and attempts to incorporate new perspectives into existing courses.

Women's Studies invites participation of students in planning and evaluation of curriculum and in planning all special activities: speakers, conferences, films and other cultural presentations. The program is governed by an elected board of four students and four faculty.

Courses are open to all students. A concentration, like a minor, is an addition to a major field, and will be recorded on the students' permanent record and transcript. Most courses meet the requirements not only of the concentration but also major and core curriculum requirements.

Seven courses or 21 credits are needed to complete the concentration. Concentrators are required to take the introductory course (or its equivalent) and ought to take at least one other interdisciplinary Women's Studies course (listed as WOST). At least one course must be taken in each of two divisions: the Humanities and the Social Sciences.



About one half of the courses listed below are offered each semester. Independent study and seminars in advanced special topics are available for students who wish to do a directed in-depth study or research project.

Students and faculty, as well as members of the Women's Studies Board serve as advisors and will assist concentrators in planning a program in Women's Studies to fit their areas of interest and need. Students are welcome to come by the Women's Studies office for more information.

# COURSES IN WOMEN'S STUDIES 1976-77

|      |     |                                                             |
|------|-----|-------------------------------------------------------------|
| WOST | 100 | Women and Society: Introduction to Women's Studies          |
| WOST | 200 | 20th Century Women Writers (subject to University approval) |
| WOST | 280 | Intermediate Special Topics in Women's Studies              |
| WOST | 300 | Feminist Thought                                            |
| WOST | 350 | Women and Imperialism (subject to University approval)      |
| WOST | 400 | Research Methods in Women's Studies                         |
| WOST | 479 | Independent Study                                           |
| WOST | 480 | Advanced Special Topics                                     |

## DEPARTMENTAL COURSES IN THE WOMEN'S STUDIES CONCENTRATION

|        |     |                                                                             |
|--------|-----|-----------------------------------------------------------------------------|
| ANTH   | 355 | Sex Roles and Relationships                                                 |
| ECON   | 292 | Women's Work                                                                |
| ECON   | 295 | Sex-Segregated Labor Markets                                                |
| ENG    | 205 | Women and Men in 19th Century Literature                                    |
| ENG    | 440 | Contemporary Women Poets                                                    |
| ENG    | 482 | Myth of the Pioneer Woman                                                   |
| FREN   | 271 | The Feminine Presence in French Literature (in trans.)                      |
| GERM   | 275 | Women and Men in German Literature (in trans)                               |
| HIST   | 357 | Articulate Women in Life and Literature 1820-1920 (subj. to Univ. approval) |
| HIST   | 361 | History of Working Class Women                                              |
| HIST   | 362 | History of Feminism                                                         |
| HIST   | 364 | History of Feminist Thought                                                 |
| HUM    | 373 | Women and the Feminine in Myth                                              |
| HUM    | 382 | Homosexuality in Literature                                                 |
| HUM    | 383 | Images of Women in Literature                                               |
| INTERD | 103 | Law and Single Parent                                                       |
| PHIL   | 287 | Equality                                                                    |
| PHIL   | 289 | Marxist Philosophy (and the family)                                         |
| PHIL   | 481 | Philosophical Issues of Feminism                                            |
| PSYCH  | 263 | Psychology and Women                                                        |
| SOCIO  | 382 | Social Psychology of Sex Roles                                              |
| SOCIO  | 451 | Field Work Methods: Investigation of Women                                  |
| SOCIO  | 475 | Socialization                                                               |
| SPAN   | 383 | Women in Spanish Literature (Span)                                          |

## DIRECTORY OF COURSES

### AMERICAN CIVILIZATION

AM CIV 300 JUNIOR COLLOQUIUM IN AMERICAN CIVILIZATION  
AN INTRODUCTION TO AMERICAN STUDIES THROUGH THE STUDY OF SELECTED TOPICS IN THE HISTORY OF AMERICAN CIVILIZATION.  
3 LECT HRS  
STAFF 3 CREDITS

AM CIV 301 JUNIOR COLLOQUIUM IN AMERICAN CIVILIZATION  
AN INTRODUCTION TO AMERICAN STUDIES THROUGH THE STUDY OF SELECTED TOPICS IN THE HISTORY OF AMERICAN CIVILIZATION.  
3 LECT HRS  
STAFF 3 CREDITS

### ANTHROPOLOGY

#### Graduation Requirements

The two departments offer a joint major in Anthropology. Majors are required to take the introductory Anthropology course plus eight advanced courses. It is required that the eight advanced courses be distributed among at least three of the following four subdisciplinary fields: Archaeology (Prehistoric Anthropology), Biological (Physical) Anthropology, Cultural and Social Anthropology (Ethnology and Ethnography), and linguistic anthropology. The student's program is individually designed in consultation with the faculty advisor, according to the student's objectives and interests. Majors are encouraged to take courses in related disciplines as these bear directly upon their Anthropological aims, e.g., Psychology, Sociology, Politics, History, Economics, Biology or the Humanities. The student may register for courses in either Anthropology Department with equal priority to majors.

NOTE: For the class of 1977 and subsequent classes new graduation requirements have been instituted. Please check with the Anthropology departmental secretaries in Colleges I and II for specific information.

ANTH 101 INTRODUCTION TO ANTHROPOLOGY  
A SURVEY OF ANTHROPOLOGY AND ITS VARIOUS SUB-DISCIPLINES-PHYSICAL ANTHROPOLOGY, ARCHAEOLOGY, LINGUISTICS, AND CULTURAL ANTHROPOLOGY. THIS COURSE EMPHASIZES HUMAN BIOLOGICAL AND CULTURAL EVOLUTION, THE RELATIONSHIP BETWEEN LANGUAGE AND CULTURE, AND THE VARIETY AND DIVERSITY OF HUMAN CULTURAL ADAPTATIONS PRESENTED THROUGH READINGS AND FILMS ON SELECTED HUNTER-GATHERER, HORTICULTURAL AND AGRICULTURAL SOCIETIES. COURSE EMPHASES MAY VARY ACCORDING TO THE SPECIAL INTERESTS OF THE INSTRUCTOR.  
3 LECT HRS  
STAFF 4 CREDITS

ANTH 206 HUNTER-GATHERER CULTURES  
STUDY OF THE HUNTER-GATHERER FORM OF HUMAN ADAPTATION. ETHNOGRAPHIC DATA FROM HUNTER-GATHERER CULTURES WILL BE EXAMINED. AND MODELS DERIVED FROM THIS DATA WILL BE APPLIED TO THE ARCHAEOLOGICAL EVIDENCE FOR PREHISTORIC HUNTER-GATHERERS.  
PREFOUITSITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. LUEDTKE 3 CREDITS

- 207 PEASANT SOCIETY APPROACHES TO THE ORIGINS AND CONTEMPORARY LIFE-  
ANTH ANTHROPOLOGICAL SECTORS OF STRATIFIED SOCIETIES IN DIFFERENT WORLD  
WAYS OF PEASANT REGIONS AND AT DIFFERENT HISTORICAL PERIODS. ANALYSIS WILL MOVE FROM  
ETHNOGRAPHIC STUDIES OF PARTICULAR PEASANT COMMUNITIES TO THEIR  
RELATIONSHIP WITH EXTERNAL POLITICAL AND ECONOMIC FORCES, AND TO A  
CONSIDERATION OF THE SPECTRUM OF COMPETING IDEOLOGICAL APPROACHES TO  
TECHNOLOGICAL AND SOCIAL CHANGE. IN A GIVEN SEMESTER THE COURSE MAY  
FOCUS UPON THE PEASANTS OF A PARTICULAR WORLD REGION, SUCH AS LATIN  
AMERICA.  
3 LECT HRS  
MS. KAPLAN, MR. MURRAY 3 CREDITS
- 209 URBAN ANTHROPOLOGY  
ANTH ANTH A COMPARATIVE STUDY OF THE FORM AND QUALITY OF URBAN LIFE IN  
SELECTED WESTERN AND NON-WESTERN CULTURES.  
3 LECT HRS  
MR. HARWOOD, MR. SIEBER 3 CREDITS
- 210 BIOSOCIAL BASIS OF HUMAN BEHAVIOR  
ANTH ANTH THE BIOLOGICAL BASIS OF HUMAN BEHAVIOR - EVOLUTIONARY PRINCIPLES,  
STUDIES OF ANIMAL BEHAVIOR, PRIMATE STUDIES, GENETIC VARIABILITY IN  
HUMAN POPULATIONS TODAY. EVALUATION OF CURRENT THEORIES OF MAN'S  
BIOLOGICAL NATURE AND HERITAGE.  
3 LECT HRS  
PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR 3 CREDITS
- 211 HUMAN ORIGINS  
ANTH ANTH AN INTRODUCTION TO THE STUDY OF MAN'S BIOLOGICAL ORIGINS WITH  
EMPHASIS ON THE FOSSIL RECORD, PRIMATE ANALOGUES OF HUMAN BEHAVIOR,  
AND THE VARIETY AND DIVERSITY OF MODERN MAN INCLUDING THE ADAPTIVE  
SIGNIFICANCE OF THIS VARIATION.  
3 LECT HRS  
PREREQUISITE: INTRO ANTH OR ANTH 109 OR PERMISSION OF INSTRUCTOR 3 CREDITS
- 214 PRIMATE BEHAVIOR  
ANTH ANTH A BROADLY BASED SURVEY OF NONHUMAN PRIMATES AS FOUND IN THEIR  
NATURAL HABITATS WITH EMPHASIS ON THE SIGNIFICANCE OF THESE STUDIES  
AS COMPARATIVE EVIDENCE IN THE FORMULATION OF A GENERAL THEORY OF  
THE ORIGINS OF HUMAN BEHAVIOR.  
3 LECT HRS  
MR. GIBBONS 3 CREDITS
- 231 MESOAMERICAN PREHISTORY AND ETHNOHISTORY  
ANTH ANTH MESOAMERICAN PREHISTORY FROM FORMATIVE TO POST-CLASSIC TIMES. THE  
SPANISH CONQUEST AND SUBSEQUENT ACCULTURATION AMONG INDIANS,  
EUROPEANS AND AFRICANS. THE NATURAL, CULTURAL AND LINGUISTIC AREAS  
WILL BE INTRODUCED. DESIGNED TO COMPLEMENT ANTHROPOLOGY 210,  
PEOPLES AND CULTURES OF MESOAMERICA  
3 LECT HRS  
PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR 3 CREDITS
- 232 THE PREHISTORY OF EASTERN NORTH AMERICA  
ANTH ANTH THIS COURSE CONCENTRATES ON THE ARCHEOLOGY OF THE AREA, BUT INCLUDES  
A DISCUSSION OF THE HISTORIC INDIANS. IT WILL ALSO BE CONCERNED WITH  
ENVIRONMENTAL DIFFERENCES AND THEIR EFFECTS ON NATIVE CULTURES.  
3 LECT HRS  
PREREQUISITE: ANTHROPOLOGY 101 OR PERMISSION OF INSTRUCTOR 3 CREDITS
- 233 NEW WORLD PREHISTORY  
ANTH ANTH A BROADLY BASED SURVEY OF PREHISTORIC SOCIETIES IN NORTH AND SOUTH  
AMERICA FROM THE PEOPLES OF THE NEW WORLD TO THE PERIOD OF INITIAL  
EUROPEAN CONTACT, INCLUDING THE APPLICATION OF ARCHEOLOGICAL MATER-  
IALS TO THE RECONSTRUCTION OF CULTURE HISTORY AND THE INTERPRETATION  
OF CONTEMPORARY PROBLEMS IN AMERICAN INDIAN SOCIETIES.  
3 LECT HRS  
PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR 3 CREDITS
- 234 OLD WORLD PREHISTORY  
ANTH ANTH A CONSIDERATION OF THE PREHISTORY OF AFRICA, EUROPE, ASIA AND  
AUSTRALIA, FROM THE ORIGINS OF MAN'S CULTURAL ADAPTATION TO THE  
AGRICULTURAL REVOLUTION.  
3 LECT HRS  
PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR 4 CREDITS
- 235 AFRICAN PRE AND PROTOHISTORY  
ANTH ANTH THE ARCHEOLOGICAL RECORD OF AFRICA FROM THE EARLIEST HUMAN TECHNOLO-  
GIES, MORE THAN TWO MILLION YEARS AGO, TO THE COLONIAL PERIOD.  
GEOGRAPHIC FOCUS ON SUB-SAHARAN AFRICA AND ETHIOPIA. EQUAL ATTENTION  
GIVEN TO EARLY PREHISTORY, THE IRON AGE, AND THE PHOTOHISTORIC  
EMERGENCE OF AFRICAN STATES.  
3 LECT HRS  
PREREQUISITE: INTRO ANTHRO OR AFRICAN HISTORY OR PERMISSION OF THE  
INSTRUCTOR. ARCHEOLOGICAL METHODS AND THEORY RECOMMENDED FOR MAJORS.  
MR. NELSON 3 CREDITS
- 237 PREHISTORIC AGRICULTURE  
ANTH ANTH THIS COURSE EXAMINES THE ORIGINS AND CONSEQUENCES OF THE AGRICULTURAL  
REVOLUTION IN BOTH THE OLD WORLD AND THE NEW WORLD.  
3 LECT HRS  
PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR 3 CREDITS
- 241 ARCHEOLOGICAL METHOD AND THEORY WITH LABORATORY  
ANTH ANTH AN INTRODUCTION TO THE THEORY AND APPLICATION OF ARCHEOLOGICAL  
METHODS. EMPHASIS IS PLACED ON THE WAYS IN WHICH ARCHEOLOGISTS VIEW  
PREHISTORY AND THE TECHNIQUES BY WHICH DATA ARE GATHERED, INTERPRETED  
AND INTEGRATED TO COMPLETE A COHERENT PICTURE OF PREHISTORIC EVENTS.  
THE LAB FOCUSES ON PRACTICAL SKILLS AND METHODS ARCHEOLOGISTS  
COMMONLY EMPLOY IN THE FIELD AND LABORATORY.  
3 LECT HRS  
PREREQUISITE: INTRO ANTHROPOLOGY OR INTRO EARTH SCIENCE OR  
PERMISSION OF THE INSTRUCTOR 4 CREDITS
- 250 ELEMENTS OF SOCIAL ORGANIZATION  
ANTH ANTH BASIC CONCEPTS AND ETHNOGRAPHIC DATA ON THE SOCIAL ORGANIZATION OF  
NON-WESTERN SOCIETIES WILL BE INTRODUCED AND USED TO EXPLORE MAJOR  
CONTEMPORARY THEORIES OF SOCIAL STRUCTURE.  
3 LECT HRS  
PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR 3 CREDITS
- 251 COMPARATIVE ETHNOLOGY  
ANTH ANTH A SYSTEMATIC COMPARATIVE APPROACH TO DESCRIPTION AND ANALYSIS OF  
CULTURE TYPES AND CULTURE AREAS. INTENSIVE COMPARATIVE ANALYSIS OF  
REPRESENTATIVE CULTURES AND SOCIAL STRUCTURES WITH SPECIAL REFERENCE  
TO THEORIES OF ECOLOGICAL ADAPTATION AND SOCIOCULTURAL EVOLUTION.  
3 LECT HRS  
PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR 3 CREDITS
- 254 PSYCHOLOGICAL ANTHROPOLOGY  
ANTH ANTH A CONSIDERATION OF INTERRELATIONSHIPS BETWEEN PERSONALITY AND  
CULTURE. THE EFFECTS OF CULTURALLY PATTERNED EXPERIENCE ON PERSONAL-  
ITY FORMATION. THE ROLE OF PSYCHOLOGICAL PROCESSES AS DETERMINANTS  
OF CULTURE.  
3 LECT HRS  
PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR 3 CREDITS
- 255 THE ANTHROPOLOGY OF EDUCATION  
ANTH ANTH ANTHROPOLOGY'S CROSS-CULTURAL, HOLISTIC, AND EVOLUTIONARY  
PERSPECTIVES ARE BROUGHT TO BEAR ON THE STUDY OF EDUCATIONAL  
PRACTICES AND INSTITUTIONS IN A VARIETY OF SOCIOCULTURAL SETTINGS--  
TRADITIONAL, MODERNIZING, AND COMPLEX, INCLUDING THE URBAN USA.  
ALTHOUGH ACCOUNT IS TAKEN OF OTHER STAGES IN THE INDIVIDUAL LIFE  
CYCLE, THE PRIMARY CONCERN IS WITH CULTURAL TRANSMISSION AND  
ENCULTURATION DURING THE PERIODS OF LATER CHILDHOOD AND ADOLESCENCE,  
PARTICULARLY WITHIN THE SETTING OF FORMAL SCHOOLING. SPECIAL



|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| ANTH | 257 MEDICAL ANTHROPOLOGY<br>ATTENTION WILL BE GIVEN TO PROBLEMS OF CULTURAL CONFLICT IN THE<br>SCHOOLS OF MODERNIZING AND COMPLEX SOCIETIES.<br>PREREQUISITE: ANTHROPOLOGY 101 OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MR. STIEBER                                                                                                                                                                                                                                                                                                                                                | 3 CREDITS | ANTH | 270 PEOPLES AND CULTURES OF MESOAMERICA<br>SURVEY OF MESOAMERICAN ETHNOLOGY INCLUDING AN INTRODUCTION TO<br>CULTURAL AND LINGUISTIC REGIONS BY THE USE OF COMPARATIVE<br>ETHNOGRAPHIC MATERIALS. ACCULTURATION DURING THE COLONIAL PERIOD<br>AMONG INDIGENOUS AND SPANISH SPEAKING POPULATIONS AND SOCIAL CHANGE<br>AMONG RURAL AND URBAN SECTORS IN THE CONTEMPORARY PERIOD WILL BE<br>EMPHASIZED.<br>3 LECT HRS                                                                                          | 3 CREDITS |
| ANTH | 258 ANTHROPOLOGY AND SOCIAL ISSUES<br>EXAMINES A NUMBER OF MODERN SOCIAL ISSUES, INCLUDING -RACIAL-<br>PREJUDICE AND CONFLICT, THE PLACE OF ETHNIC MINORITIES IN MODERN<br>INDUSTRIAL SOCIETY, POVERTY, EDUCATION, VIOLENCE, BEHAVIORAL<br>DEVIANCE, ENVIRONMENTAL POLLUTION AND DEGRADATION, AND COLONIALISM.<br>ANTHROPOLOGICAL AND OTHER BEHAVIORAL SCIENCE STUDIES ARE BROUGHT TO<br>BEAR UPON THESE PROBLEMS AS SOCIAL ISSUES AND AS ETHICAL ISSUES FOR<br>ANTHROPOLOGISTS AND OTHERS.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MR. LANDY | 3 CREDITS | ANTH | 271 INDIANS OF NORTH AMERICA<br>AN INTRODUCTORY SURVEY OF NORTH AMERICAN INDIAN SOCIETIES AND<br>CULTURE. EMPHASIS WILL BE PLACED ON THE DESCRIPTIVE COMPARISON OF<br>SELECTED INDIAN SOCIETIES THROUGH THE STUDY OF NORTH AMERICAN<br>CULTURE AREAS, LEVELS OF SOCIO-CULTURAL INTEGRATION, PLACES OF<br>INDIAN HISTORY, AND CONTACT WITH EURO-AMERICAN CULTURE.<br>3 LECT HRS<br>MR. BEROE                                                                                                                | 3 CREDITS |
| ANTH | 259 ANTHROPOLOGY AND SOCIAL ISSUES<br>EXAMINES A NUMBER OF MODERN SOCIAL ISSUES, INCLUDING -RACIAL-<br>PREJUDICE AND CONFLICT, THE PLACE OF ETHNIC MINORITIES IN MODERN<br>INDUSTRIAL SOCIETY, POVERTY, EDUCATION, VIOLENCE, BEHAVIORAL<br>DEVIANCE, ENVIRONMENTAL POLLUTION AND DEGRADATION, AND COLONIALISM.<br>ANTHROPOLOGICAL AND OTHER BEHAVIORAL SCIENCE STUDIES ARE BROUGHT TO<br>BEAR UPON THESE PROBLEMS AS SOCIAL ISSUES AND AS ETHICAL ISSUES FOR<br>ANTHROPOLOGISTS AND OTHERS.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MR. LANDY | 3 CREDITS | ANTH | 272 CULTURES OF OCEANIA<br>A BROADLY BASED SURVEY OF THE HISTORY, ETHNOGRAPHY, AND MODERNIZATION<br>OF OCEANIA, INCLUDING MICRONESIA, POLYNESIA, MELANESIA, AND AUSTRALIA.<br>3 LECT HRS<br>MR. BEROE                                                                                                                                                                                                                                                                                                      | 3 CREDITS |
| ANTH | 261 ECONOMIC SYSTEMS OF NON-INDUSTRIALIZED SOCIETIES<br>THE STUDY OF PRE-INDUSTRIAL AND PEASANT-NONMONETIZED, NON-WESTERN<br>ECONOMIC SYSTEMS. THE RELATIONSHIPS BETWEEN ECONOMY AND SOCIOCULTURAL<br>SYSTEMS.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MR. FAZEL, MS. OLMSTEAD                                                                                                                                                                                                                                                                | 3 CREDITS | ANTH | 273 PEOPLES AND CULTURES OF AFRICA<br>IN-DEPTH STUDY OF SELECTED AFRICAN SOCIETIES. EXAMINING TRADITIONAL<br>INSTITUTIONS. THE COLONIAL SITUATION, AND MODERNIZATION.<br>3 LECT HRS<br>MR. MARWOOD, MS. OLMSTEAD                                                                                                                                                                                                                                                                                           | 3 CREDITS |
| ANTH | 262 PASTORAL NOMADISM<br>A COMPARATIVE STUDY OF THE SOCIAL, ECONOMIC AND POLITICAL ORGANIZA-<br>TION OF NOMADIC PASTORAL PEOPLES OF THE MIDDLE EAST, CENTRAL ASIA<br>AND NORTH AFRICA. OF SPECIAL CONCERN ARE - A. THE ORGANIZATIONAL<br>ADAPTATIONS OF NOMADS TO VARIOUS ECOLOGICAL SYSTEMS, AND, B. THE<br>PROCESSES OF SOCIO-CULTURAL CHANGE INCLUDING SETTLEMENT, DE-TRIBAL-<br>IZATION AND MODERNIZATION.<br>PREREQUISITE: INTRO ANTHROPOLOGY AND PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MR. FAZEL                                                                             | 3 CREDITS | ANTH | 274 AFRO-AMERICAN ETHNOLOGY<br>THIS COURSE SURVEYS AND DOCUMENTS THE SIGNIFICANT CONTRIBUTIONS TO<br>LATIN AMERICAN AND CARIBBEAN CULTURES MADE BY AFRICAN-DEIVED<br>POPULATIONS IN THE NEW WORLD. UTILIZING ETHNOGRAPHIC AND<br>HISTORIC SOURCES, THEORETICAL APPROACHES USED IN AFRICAN-AMERICAN<br>ETHNOLOGY WILL BE CRITICALLY EXAMINED. CULTURAL DIVERSITY AND UNITY<br>AMONG AFRICAN-AMERICAN POPULATIONS IN A VARIETY OF CREOLE AND OTHER<br>CULTURES WILL BE EXAMINED.<br>3 LECT HRS<br>MS. KAPLAN | 3 CREDITS |
| ANTH | 263 CULTURAL ECOLOGY<br>THE INTERRELATIONSHIPS AMONG HUMAN POPULATIONS, HUMAN INSTITUTIONS,<br>AND THEIR PHYSICAL ENVIRONMENT.<br>PREREQUISITE: ANTHROPOLOGY 101 OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MR. FAZEL, MS. OLMSTEAD                                                                                                                                                                                                                                                                                                                                                  | 3 CREDITS | ANTH | 275 PEOPLES AND CULTURES OF EAST ASIA<br>AN OVERVIEW OF THE DEVELOPMENT OF CIVILIZATIONS OF CHINA AND JAPAN.<br>EMPHASIS ON UNDERSTANDING NORMS, VALUES AND BEHAVIORAL PATTERNS OF<br>THESE PEOPLES IN PRE-MODERN AND CONTEMPORARY PERIODS. DISCUSSES<br>KINSHIP, RELIGION, LITERATURE, URBAN AND RURAL LIFE, INTELLECTUAL<br>THRUSTS, AND ORGANIZED ACTION.<br>3 LECT HRS<br>STAFF                                                                                                                        | 3 CREDITS |
| ANTH | 264 POWER AND CONFLICT IN NON-WESTERN SOCIETIES<br>A COMPARATIVE APPROACH TO PRE-INDUSTRIAL AND NON-WESTERN POLITICAL<br>ORGANIZATION CONSIDERED AS PARTS OF SOCIOCULTURAL SYSTEMS.<br>EMPHASIS INCLUDE POLITICAL ACTIVITY, COMPETITION FOR POWER AND<br>AUTHORITY, LEADERSHIP, DECISION MAKING, TYPES OF POLITICAL SYSTEM,<br>DYNAMICS OF CHANGE, ARCHAIC REBELLIONS, ETC.<br>PREREQUISITE: INTRO ANTH OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MR. BEROE, MR. FAZEL                                                                                                              | 3 CREDITS | ANTH | 276 PEOPLES AND CULTURES OF EUROPE<br>ANTHROPOLOGICAL APPROACHES TO THE STUDY OF EUROPEAN SOCIETIES<br>AND CULTURES BASED PRIMARILY ON THE DESCRIPTION AND ANALYSIS OF<br>SMALL LOCAL COMMUNITIES, THEIR INTERNAL SOCIAL ORGANIZATION, AND<br>THEIR EXTERNAL RELATIONS WITH THE NATIONAL STATE.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF                                                                                                                     | 3 CREDITS |
| ANTH | 267 ANTHROPOLOGY OF RELIGION<br>A COMPARATIVE STUDY OF RELIGION, INCLUDING BELIEF SYSTEMS, RITUAL<br>AND MYTH.<br>PREREQUISITE: ANTHROPOLOGY 101 OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MR. MARWOOD, MS. OLMSTEAD                                                                                                                                                                                                                                                                                                                                                                | 3 CREDITS | ANTH | 277 CELTIC COMMUNITIES<br>ANTHROPOLOGICAL APPROACHES TO THE STUDY OF CELTIC COMMUNITIES IN<br>IRELAND, WALES AND BRITANNY. THE COURSE WILL EMPHASIZE THE COMMUNITY<br>APPROACH, THE DESCRIPTION, ANALYSIS AND COMPARISON OF LOCAL RURAL<br>COMMUNITIES AND THEIR EXTERNAL RELATIONS WITH URBAN CENTERS AND THE<br>NATION STATE.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF                                                                                     | 3 CREDITS |
| ANTH | 278 COMMUNITIES AND SUBCULTURES OF USA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           | ANTH | 278 COMMUNITIES AND SUBCULTURES OF USA                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |



|      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |
|------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| ANTH | 279 | PEOPLES AND CULTURES OF THE MIDDLE EAST<br>SURVEY OF MIDDLE EASTERN ETHNOLOGY. AN ANTHROPOLOGICAL APPROACH TO THE CONTEMPORARY MIDDLE EAST, WITH SPECIAL EMPHASIS UPON NOMADIC AND PEASANT POPULATIONS.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MR. FAZEL                                                                                                                                                                                                                                                                                                                                                          | 3 CREDITS |
| ANTH | 280 | SPECIAL TOPICS<br>STUDY OF SPECIAL TOPICS, VARYING ACCORDING TO INSTRUCTOR.<br>PREREQUISITE: ANTHROPOLOGY 101 OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3 CREDITS |
| ANTH | 281 | STRUCTURE OF HUMAN LANGUAGE<br>CONCEPTS AND METHODS FOR ANALYZING THE STRUCTURES AND RULES BY MEANS OF WHICH SPEAKERS OF ANY LANGUAGE UNCONSCIOUSLY PATTERN THEIR SPEECH BEHAVIOR. STRATEGIES FOR IDENTIFYING PHONOLOGICAL, MORPHOLOGICAL, AND SYNTACTIC STRUCTURES WILL BE PRESENTED, AS WELL AS A THEORETICAL PERSPECTIVE FOR ASSESSING CONTEMPORARY TRENDS IN GENERATIVE LINGUISTICS AND ETHNOSCIENCE.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MR. MURRAY                                                                                                                                                       | 3 CREDITS |
| ANTH | 285 | LANGUAGE AND CULTURE<br>AN EXAMINATION OF THE RELATIONSHIPS BETWEEN LANGUAGE AND CULTURE, WITH SPECIAL EMPHASIS ON THE RELEVANCE OF LINGUISTIC ANALYSIS AND THE STUDY OF SPEECH AS SOCIAL BEHAVIOR TO PROBLEMS OF ANTHROPOLOGY.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MS. TAKAKI                                                                                                                                                                                                                                                                                                                                 | 3 CREDITS |
| ANTH | 311 | PRIMATE ANATOMY<br>COMPARATIVE ANATOMY OF THE PRIMATES WITH EMPHASIS ON DISSECTION IN ORDER TO ASCERTAIN THE FUNCTIONAL -I.E. BIOCHEMICAL- INTERRELATIONSHIPS OF PRIMATE MUSCULO-SKELETAL SYSTEMS. THIS COMPARATIVE EVIDENCE WILL BE USED AS A BASIS FOR INTERPRETING THE FOSSIL RECORD OF MAN.<br>PREREQUISITE: PRIMATE EVOLUTION OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS, 3 LAB HRS<br>MR. GIBBONS                                                                                                                                                                                                                                                      | 4 CREDITS |
| ANTH | 350 | KINSHIP<br>BASIC CONCEPTS AND ETHNOGRAPHIC DATA ON KINSHIP IN WESTERN AND NON-WESTERN SOCIETIES WILL BE INTRODUCED AND USED TO HIGHLIGHT MAJOR CONTEMPORARY APPROACHES TO THE STUDY OF SOCIAL STRUCTURE.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MR. HARWOOD, MS. TAKAKI                                                                                                                                                                                                                                                                                                                                           | 3 CREDITS |
| ANTH | 355 | SEX ROLES AND RELATIONSHIPS<br>CROSS-CULTURAL VARIATION IN ECONOMIC, POLITICAL, AND PARENTAL ROLES OF WOMEN AND MEN IN PRELITERATE AND NON-WESTERN SOCIETIES WITH SPECIAL REFERENCE TO THE CAUSES AND CONSEQUENCES OF THIS VARIATION.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MS. AYRES                                                                                                                                                                                                                                                                                                                            | 3 CREDITS |
| ANTH | 355 | MALE AND FEMALE<br>CROSS-CULTURAL VARIATION IN ECONOMIC, POLITICAL, AND PARENTAL ROLES OF WOMEN AND MEN IN PRELITERATE AND NON-WESTERN SOCIETIES WITH SPECIAL REFERENCE TO THE CAUSES AND CONSEQUENCES OF THIS VARIATION.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MS. AYRES                                                                                                                                                                                                                                                                                                                                        | 3 CREDITS |
| ANTH | 360 | PRIMATE SOCIALIZATION<br>THE RELATIONS BETWEEN NON-HUMAN PRIMATE INFANTS AND OTHER TROOP MEMBERS WILL BE EXAMINED. THE FOCUS WILL BE ON HOW SPECIAL EXPERIENCES FROM INFANCY UNTIL ADULTHOOD SHAPE AN INDIVIDUAL'S FUTURE. SOCIAL BEHAVIOR, TOPICS DISCUSSED WILL INCLUDE: CRITICAL PERIODS, ATTACHMENT FORMATION, SEX DIFFERENCES AND ACQUISITION OF SEX ROLES, PLAY BEHAVIOR, 'AUNTING' AND OTHER CARE-TAKING BEHAVIORS.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MS. BISHOP                                                                                                                                      | 3 CREDITS |
| ANTH | 373 | AFRICAN RELIGIONS<br>THE COURSE DEALS WITH AFRICAN RELIGIOUS BELIEFS AND PRACTICES, AND THE STRUCTURES AND NATURE OF AFRICAN SOCIETIES AND THE FUNCTIONS OF RELIGION WITHIN THEM.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                    | 3 CREDITS |
| ANTH | 381 | METHODS OF CROSS-CULTURAL RESEARCH<br>AN INTRODUCTION TO THE THEORY AND METHOD OF CROSS-CULTURAL RESEARCH. PRACTICE IN THE DESIGN AND IMPLEMENTATION OF A LIMITED CROSS-CULTURAL STUDY.<br>PREREQUISITE: TWO ADVANCED COURSES IN ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>MS. AYRES                                                                                                                                                                                                                                                                                                                                                       | 3 CREDITS |
| ANTH | 383 | ANTHROPOLOGICAL THEORY<br>SURVEY OF THE MAJOR THEORETICAL POSITIONS AND CONCEPTS IN SOCIAL AND CULTURAL ANTHROPOLOGY, WITH SPECIAL REFERENCE TO PROBLEMS OF STRUCTURE, FUNCTION AND PROCESS.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                         | 3 CREDITS |
| ANTH | 478 | DIRECTED STUDY III<br>ADVANCED STUDENTS MAY BE INVITED BY THE DEPARTMENT TO CONDUCT INDEPENDENT RESEARCH. SUPERVISION AND GUIDANCE BY MEMBERS OF THE FACULTY.<br>PREREQUISITE: INTRO ANTHROPOLOGY AND PERMISSION OF INSTRUCTOR<br>HRS BY ARRANGEMENT<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                               | 3 CREDITS |
| ANTH | 480 | SPECIAL TOPICS SEMINAR<br>INTENSIVE STUDY OF SPECIAL TOPICS, VARYING EACH YEAR ACCORDING TO INSTRUCTOR.<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3 CREDITS |
| ANTH | 483 | FIELD RESEARCH IN ANTHROPOLOGY I<br>SUPERVISED SEQUENCE OF FIELD RESEARCH WITHIN ONE OF THE SUB-DISCIPLINES OF ANTHROPOLOGY-BIOLOGICAL ANTHROPOLOGY, ARCHAEOLOGY, SOCIAL-CULTURAL ANTHROPOLOGY, LINGUISTICS. CONTINUOUS STUDY IN A FIELD SITUATION DIRECTED BY A PROFESSIONAL ANTHROPOLOGIST.<br>GRADING ON A PASS/FAIL BASIS. MAY INCLUDE ATTENDANCE AT FIELD SCHOOLS DIRECTED BY QUALIFIED FACULTY OUTSIDE THE UNIVERSITY WITH PERMISSION OF THE STUDENT'S DEPARTMENT. A STUDENT MAY RECEIVE A MAXIMUM OF SIX CREDITS TOWARD THE MAJOR<br>PREREQUISITE: INTRO ANTHROPOLOGY OR PERMISSION OF INSTRUCTOR<br>SIX WEEKS OF CONTINUOUS FIELD RESEARCH<br>STAFF | 3 CREDITS |
| ANTH | 485 | FIELD SEMINAR IN ARCHAEOLOGY<br>A SPECIALIZED, ADVANCED SEMINAR FOCUSED ON PROBLEMS AND ISSUES IN FIELD RESEARCH SUCH AS MICROSTRATIGRAPHY, SITE SURVEY AND EXCAVATION SAMPLING, AND ARCHAEOLOGICAL RESOURCE MANAGEMENT. MAY BE REPEATED FOR CREDIT UP TO A MAXIMUM OF 20 CREDITS, BUT ONLY ONE SEMINAR OF 3 OR MORE CREDITS WILL BE ACCEPTED TO SATISFY REQUIREMENTS FOR THE MAJOR. IF ANTHROPOLOGY 485 IS ACCEPTED AS ONE COURSE REQUIREMENT TOWARD THE MAJOR, ONLY THREE CREDITS IN ANTHRO 483 OR 484 WILL ALSO                                                                                                                                          | 3 CREDITS |

BE PERMITTED TOWARD FULFILLMENT OF MAJOR REQUIREMENTS. SUCH SEMINARS ARE GIVEN ONLY OCCASIONALLY AS FACULTY AND FINANCIAL RESOURCES PERMIT. SEE DEPARTMENTAL SECRETARY IN COLLEGE II FOR FURTHER INFORMATION.  
 PREREQUISITE: PERMISSION OF INSTRUCTOR  
 HRS BY ARRANGEMENT (CREDITS VARIABLE WITH DEPT. APPROVAL) 3-10 CREDITS  
 MS. NELSON, MS. LUEDTKE

490 HONORS SEMINAR  
 AN INTENSIVE PROGRAM OF INDIVIDUAL RESEARCH CONDUCTED UNDER THE DIRECTION OF A MEMBER OF THE DEPARTMENT AND LEADING TO THE PRESENTATION OF AN HONORS THESIS. A STUDENT WILL PRESENT THE THESIS AS A PAPER AND AS A TALK IN THE ANTHROPOLOGY COLLOQUIUM SERIES. THESE WILL BE GRADED BY A COMMITTEE OF THREE FACULTY MEMBERS INCLUDING THE ADVISOR AND ONE PERSON CHOSEN BY THE STUDENT.  
 PREREQUISITE: SENIOR STANDING, 3.5 GPA IN MAJOR, AND AT LEAST FOUR UPPER LEVEL ANTHROPOLOGY COURSES, OR DEPARTMENTAL PERMISSION  
 HRS BY ARRANGEMENT  
 STAFF 3 CREDITS

491 HONORS COLLOQUIUM  
 AN INTENSIVE PROGRAM OF INDIVIDUAL RESEARCH CONDUCTED UNDER THE DIRECTION OF AN HONORS ADVISOR AND LEADING TO THE PRESENTATION OF AN HONORS THESIS. STUDENT PROGRESS WILL BE MONITORED IN A COLLOQUIUM DEVOTED TO DISCUSSIONS BETWEEN STUDENTS AND ADVISORS OF METHODS, INSIGHTS, AND COMMON PROBLEMS, AND FINALLY TO THE PRESENTATION BY EACH STUDENT OF AN ORAL REPORT ON HIS COMPLETED RESEARCH.  
 PREREQUISITE: COMPLETION OF ANTHROPOLOGY 490 WITH A GRADE OF 'A'  
 HRS BY ARRANGEMENT  
 STAFF 3 CREDITS

ANTH XXX TUTORIALS IN ANTHROPOLOGY  
 OPTIONAL PROGRAMS OF INTENSIVE STUDY TAKEN IN CONJUNCTION WITH ANY REGULAR UPPER DIVISION CLASS AND CENTERED AROUND A SPECIAL TOPIC RELATED TO THE SUBJECT MATTER OF THE COURSE. TUTORIALS INVOLVE REGULAR MEETINGS OF THE INSTRUCTOR AND STUDENT TOGETHER WITH APPROPRIATE READING AND WRITING ASSIGNMENTS. WORK UNDERTAKEN IN THE TUTORIAL IS IN ADDITION TO AND GRADED SEPARATELY FROM THE REGULAR COURSE WORK.  
 PREREQUISITE: PERMISSION OF INSTRUCTOR  
 HRS BY ARRANGEMENT  
 STAFF 1 CREDIT

# ARMENIAN

ARMEN 101 ELEMENTARY ARMENIAN I  
 FOR STUDENTS WITH NO PREVIOUS KNOWLEDGE OF ARMENIAN. INTENSIVE PRACTICE IN LANGUAGE SKILLS WITH INTRODUCTORY READING.  
 4 LECT HRS  
 MS. BATMASIAN 4 CREDITS

ARMEN 102 ELEMENTARY ARMENIAN II  
 A CONTINUATION OF ARMENIAN 101. FOR STUDENTS WITH NO PREVIOUS KNOWLEDGE OF ARMENIAN. INTENSIVE PRACTICE IN LANGUAGE SKILLS WITH INTRODUCTORY READING.  
 4 LECT HRS  
 MS. BATMASIAN 4 CREDITS

ARMEN 201 INTERMEDIATE ARMENIAN I  
 EMPHASIS ON ADVANCED GRAMMAR - DECLENSION OF NOUNS AND CONJUGATION VERBS, COUPLED WITH DEVELOPMENT OF TRANSLATION SKILLS THROUGH READING EXERCISES.  
 PREREQUISITE: ARMENIAN 102 OR EQUIVALENT  
 3 LECT HRS  
 MS. BATMASIAN 4 CREDITS

ARMEN 202 INTERMEDIATE ARMENIAN II  
 EMPHASIS ON ADVANCED GRAMMAR-DECLENSION OF NOUNS AND CONJUGATION VERBS, COUPLED WITH DEVELOPMENT OF TRANSLATION SKILLS THROUGH READING EXERCISES.  
 PREREQUISITE: ARMENIAN 201 OR EQUIVALENT  
 3 LECT HRS  
 MS. BATMASIAN 4 CREDITS

ARMEN 301 ADVANCED ARMENIAN  
 302 ADVANCED READING, CONVERSATION, COMPOSITION AND TRANSLATION.  
 PREREQUISITE-ELEMENTARY AND INTERMEDIATE ARMENIAN  
 3 LECT HRS  
 MS. BATMASIAN 3 CREDITS

## ART

### Graduation Requirements

Majors in Art are required to take an introductory level course in both Art History and creative work and a minimum of eight advanced courses which collectively provide a distribution among historical styles and media acceptable to a departmental advisor. With permission of the department, honors students may substitute a senior thesis for one or two of the advanced courses.

ART 100 INTRODUCTION TO THE LANGUAGE OF ART  
 THE NATURE OF FORM, CONTENT, TECHNIQUE, AND STYLE IN PAINTING, SCULPTURE, ARCHITECTURE AND GRAPHIC ARTS. DESIGNED TO SHARPEN THE STUDENT'S RESPONSE TO ORIGINAL WORKS. MUSEUM MEETINGS ALTERNATE WITH LECTURE/DISCUSSIONS ON KEY PROBLEMS.  
 3 LECT HRS  
 STAFF 4 CREDITS

ART 110 HERITAGE OF ART  
 THE COURSE WILL TAKE A BROAD LOOK AT OUR ARTISTIC HERITAGE AND HOW THE UNDERSTANDING OF IT CHANGED DURING THE NINETEENTH CENTURY. IT WILL BEGIN WITH THE AMERICAN SENSE OF 'HERITAGE' AT THE TIME OF THOMAS JEFFERSON AND END WITH THE IDEAS OF THE GREAT PUBLIC COLLECTORS IN THE LATE NINETEENTH CENTURY. A LARGE NUMBER OF MAJOR MONUMENTS WILL BE COVERED.  
 4 LECT HRS  
 STAFF 4 CREDITS

ART 175 VISUAL FUNDAMENTALS  
 DEVELOPMENT OF VISUAL AWARENESS THROUGH PROJECTS, LECTURES, DISCUSSIONS WHICH USE THE CAMERA AND OTHER MEDIA AS A MEANS OF ESTABLISHING NEW AND CREATIVE RELATIONSHIPS WITH A VISUAL ENVIRONMENT.  
 4 LECT HRS  
 STAFF 4 CREDITS

ART 195 INTRODUCTION TO FILM ANALYSIS  
 A NON-HISTORICAL COURSE INTENDED TO PROVIDE AN UNDERSTANDING OF THE ELEMENTS OF FILM LANGUAGE, THE BASIC FILM GENRES AND CERTAIN MAJOR FILM STYLES. INTENSIFIED EXAMINATION OF A FEW SELECTED FILMS REPRESENTING NARRATIVE, DOCUMENTARY AND EXPERIMENTAL TECHNIQUES THROUGH THE STUDY OF SCRIPTS, THE USE OF REPLAY AND THE ANALYSIS OF FILM EXCERPTS.  
 3 LECT HRS, 3 LAB HRS  
 MR. RISSE 4 CREDITS

ART 201 ANCIENT AND MEDIEVAL ART  
 THE FIRST HALF OF THE COURSE WILL OFFER A HISTORICAL SURVEY OF THE ART AND ARCHITECTURE OF THE ANCIENT WORLD GIVING PARTICULAR EMPHASIS TO EGYPTIAN, GREEK, AND ROMAN CULTURES. FROM MID-SEVENTH TO THE END OF THE COURSE, THE STUDENTS WILL BE INTRODUCED TO THE ARTS IN MEDIEVAL EUROPE WITH A SPECIAL FOCUS UPON THE ROMANESQUE AND GOTHIC STYLES. SUBJECT TO FINAL APPROVAL  
 3 LECT HRS  
 STAFF 3 CREDITS

ART 225 RENAISSANCE AND BAROQUE ART  
 A SURVEY OF EUROPEAN ART FROM 1400 TO 1750.  
 3 LECT HRS  
 MS. ARR 3 CREDITS



- ART 234 19TH AND 20TH CENTURY ART  
A BROAD SURVEY OF THE PERIOD WITH MAJOR EMPHASIS ON PAINTING. FOCUS IN THE NINETEENTH CENTURY ON THE RELATIONSHIP BETWEEN THE VISUAL ARTS AND THE SIGNIFICANT CHANGES IN SOCIAL AND POLITICAL ATTITUDES IN THE TWENTIETH CENTURY ON SUCH MOVEMENTS AS CUBISM, GERMAN EXPRESSIONISM, AND SURREALISM, AND ON SUCH ARTISTS AS MATISSE, PICASSO, DUCHAMP AND MIRO. WITH A BRIEF LOOK AT DEVELOPMENTS IN ART SINCE WORLD WAR II.  
3 LECT HRS  
MR. CERVERA  
3 CREDITS
- ART 250 CONTEMPORARY ART  
STUDY OF THE VISUAL ARTS FROM WORLD WAR II TO THE PRESENT. DEALING WITH SUCH MOVEMENTS AS ABSTRACT EXPRESSIONISM, POP ART, MINIMAL ART AND NEW REALISM.  
3 LECT HRS  
MR. CERVERA  
3 CREDITS
- ART 252 MODERN ARCHITECTURE  
PROBLEMS IN THE THEORY OF ARCHITECTURAL DESIGN DURING THE ERA OF ROMANTIC CLASSICISM AND THE EVOLUTION OF NEW POTENTIALS IN THE 19TH CENTURY. THE ROLE OF TECHNOLOGY, NEW STRUCTURAL SOLUTIONS, METHODS OF CONSTRUCTION AND THE DEVELOPMENT OF NEW CONCEPTIONS OF SPACE FOR CONTEMPORARY BUILDINGS.  
3 LECT HRS  
MS. FERGUSON  
3 CREDITS
- ART 254 AMERICAN ARCHITECTURE  
A SURVEY OF AMERICAN ARCHITECTURE AND TOWN PLANNING FROM THE 17TH CENTURY TO THE PRESENT. TOPICS STUDIED WILL INCLUDE EARLY COLONIAL ARCHITECTURE, THE SEARCH FOR A NEW STYLE FOR THE NEW REPUBLIC, 19TH CENTURY EXPANSION AND ECLECTICISM, THE RIVAL OF DOMESTIC ARCHITECTURE THE SKYSCRAPER, STYLE AND THE DEVELOPMENT OF MODERN ARCHITECTURE IN THE 20TH CENTURY.  
3 LECT HRS  
MS. FERGUSON  
3 CREDITS
- ART 258 FAR EASTERN PAINTING  
THE RELATIONSHIP OF CHINESE AND JAPANESE PAINTING, STRESSING THE SPECIAL CHARACTERISTICS OF EACH. SCROLL PAINTINGS, SCREEN AND JAPANESE PRINTS ARE DISCUSSED.  
3 LECT HRS  
STAFF  
3 CREDITS
- ART 262 THE ARTS OF CHINA  
A SURVEY THAT WILL INVESTIGATE THE ART FORMS THAT HAVE BEEN MOST IMPORTANT IN CHINA OVER A 4,000 YEAR PERIOD. THEY WILL BE CONSIDERED IN THE CONTEXT OF THE LITERATURE AND SOCIAL ORGANIZATION OF THE INDIVIDUAL PERIODS.  
3 LECT HRS  
STAFF  
3 CREDITS
- ART 264 THE ART OF AFRICA  
AN INTRODUCTION TO THE AFRICAN ARTS (ESPECIALLY CARVED FIGURES, MASKS, ROCK AND WALL PAINTINGS, TEXTILES AND RURAL OBJECTS) IN RELATION TO THE ETHNIC BACKGROUND AS WELL AS AESTHETIC EXPRESSION. ART HISTORICAL PROBLEMS WITHIN THE CONTINENT AND THE IMPACT OF AFRICAN FORMS ON OTHER CULTURES OF THE 19TH AND 20TH CENTURIES.  
3 LECT HRS  
STAFF  
3 CREDITS
- ART 266 NORTH AMERICAN INDIAN ART  
AN EXAMINATION OF ART FORMS AND STYLES OF AMERICAN INDIANS NORTH OF MEXICO, CONCENTRATING ON RELATIONSHIPS OF ART TO ITS SOCIETY WITH EMPHASIS ON THE STRUCTURAL ANALYSIS OF FORM AND PATTERN, THE IMPACT OF EUROPEAN CULTURE, THE ROLE OF THE ARTIST AND THE RELATIONSHIP OF TECHNOLOGY AND ENVIRONMENT TO THE ART FORM.  
3 LECT HRS  
STAFF  
3 CREDITS
- ART 267 ORIGINS AND DEVELOPMENT OF WESTERN ARCHITECTURE  
THE EVOLUTION OF ARCHITECTURE FROM ITS BEGINNINGS IN MESOPOTAMIA, EGYPT AND GREECE THROUGH ITS DEVELOPMENT IN THE RENAISSANCE AND
- ART 268 BAROQUE PERIODS, WITH SPECIAL ATTENTION TO THE RELATION OF MAN AND ENVIRONMENT, THE ARTICULATION OF SPACE AND THE THEORY OF ARCHITECTURAL DESIGN.  
3 LECT HRS  
MS. FERGUSON  
3 CREDITS
- ART 26A HISTORY OF WESTERN SCULPTURE  
A SURVEY OF WESTERN SCULPTURE FROM GREECE TO CONTEMPORARY AMERICA. DISCUSSION WILL BRING OUT THE VARIOUS DEFINITIONS OF SCULPTURE HELD BY PEOPLE OF DIFFERENT AGES AND CULTURES, CRITICAL APPROACHES TO SCULPTURE IN THE 20TH CENTURY, AND THE USE AND EFFECT OF DIFFERENT MEDIA. THE COURSE WILL CONCENTRATE ON MAJOR MONUMENTS AND ARTISTS. FIELD TRIPS REQUIRED.  
3 LECT HRS  
MS. BUTLER  
3 CREDITS
- ART 270 HISTORY OF FILM  
HISTORY OF THE MEDIUM FROM 1895 TO THE PRESENT THROUGH THOSE FILMS RECOGNIZED AS MASTERPIECES OF THE ART OR THOSE WHICH HAVE PRESENTED NEW TECHNICAL-CONCEPTUAL INVENTIONS IN THE CINEMATIC VOCABULARY. CLASS TIME INCLUDES FILM SCREENING, LECTURE AND DISCUSSION.  
3 LECT HRS, 1 HR FILM SCREENING  
MR. RISSE  
3 CREDITS
- ART 272 HISTORY OF PHOTOGRAPHY  
A SURVEY OF THE HISTORY OF PHOTOGRAPHY FROM THE INVENTION OF THE MEDIUM IN THE 19TH CENTURY TO THE PRESENT. EMPHASIS ON PHOTOGRAPHY AS A MEDIUM OF EXPRESSION AND COMMUNICATION, AND ON THE DISTINCTIVE QUALITIES OF SELECTED PHOTOGRAPHERS.  
3 LECT HRS  
STAFF  
3 CREDITS
- ART 275 VISUAL EXPERIMENTS  
DEVELOPMENT OF VISUAL AWARENESS AND UNDERSTANDING VISUAL MODES OF EXPRESSION THROUGH ASSIGNED PROBLEMS REQUIRING INDIVIDUAL SOLUTIONS.  
PREREQUISITE: ART 100 OR ART 175  
4 LECT HRS  
STAFF  
3 CREDITS
- ART 281 DRAWING I  
BASIC MATERIALS AND TECHNIQUES, WITH EMPHASIS ON DRAWING AS A PRIMARY MEANS FOR THE DESCRIPTION AND INTERPRETATION OF MAN AND HIS ENVIRONMENT. PROBLEMS IN STILL LIFE, LANDSCAPE, AND LIFE DRAWING.  
PREREQUISITE: ART 100 OR ART 175  
4 LECT HRS  
STAFF  
3 CREDITS
- ART 293 PHOTOGRAPHY I  
THIS COURSE INTRODUCES THE STUDENT TO BASIC ISSUES IN PHOTOGRAPHY. MECHANICS OF THE CAMERA, TECHNIQUES OF THE DARKROOM, AND CREATIVE AND PERSONAL IMPROV. ILLUSTRATED LECTURES, CLASS CRITIQUES, AND ASSIGNED LAB HOURS. SOME ATTENTION IS GIVEN TO THE HISTORY OF PHOTOGRAPHY AND ITS MORE SIGNIFICANT CREATIVE IMPULSES.  
PREREQUISITE: ART 100 OR ART 175  
2 LECT HRS, 2 LAB HRS  
STAFF  
3 CREDITS
- ART 295 FILM/VIDEO I  
A COURSE WHOSE BASIC AIM IS THAT OF THE TRADITIONAL BEGINNING FILM-MAKING COURSE, BUT WHICH, FOR REASONS OF FLEXIBILITY, ECONOMY, AND EASE OF USE, EMPLOYS BOTH SUPER-8 AND 1/2 IN. VIDEO TAPE EQUIPMENT. THE COURSE IS ORGANIZED AROUND WEEKLY ASSIGNMENTS OF INCREASING COMPLEXITY DESIGNED TO ALLOW STUDENTS TO EXPLORE THE COMMUNICATIVE AND EXPRESSIVE POSSIBILITIES OF THE MOVING IMAGE.  
PREREQUISITE: ART 100 OR ART 175  
6 COMBINED LECT AND LAB HRS  
STAFF  
3 CREDITS
- ART 303 CLASSICAL PAINTING  
THE STYLE AND TECHNIQUE OF GREEK VASE PAINTING, ROMAN WALL PAINTING AND EASEL PAINTING WITH EMPHASIS ON LITERARY TRADITION.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
STAFF



- ART 310 STUDIES IN THE HISTORY OF PAINTING  
A TOPIC COURSE DESIGNED TO PROVIDE IN-DEPTH STUDY IN DIFFERENT ASPECTS OF THE HISTORY OF PAINTING. COURSES UNDER THIS HEADING WILL DEAL WITH IDEAS, ISSUES, MOVEMENTS AND MAJOR FIGURES IN PAINTING. TOPICS WILL VARY BY SEMESTER AND INSTRUCTOR. CONSULT CURRENT COURSE ANNOUNCEMENT FOR SPECIFICS.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
STAFF  
3 CREDITS
- ART 316 PAINTING, 1780-1850  
A STUDY OF THE MAJOR MOVEMENTS AND ARTISTS INVOLVED IN THE EVOLUTION OF 19TH CENTURY PAINTING IN THE FIRST HALF OF THE 19TH CENTURY. AN INVESTIGATION OF THE MAJOR MOVEMENTS IN EUROPEAN PAINTING BETWEEN 1780 AND 1850. NEOCLASSICISM AND ROMANTICISM. THE COURSE WILL TRACE THE DEVELOPMENT OF THESE MOVEMENTS AND THAT OF THE LEADING FIGURES RESPONSIBLE FOR THESE DEVELOPMENTS (E.G.: PLAKE, FUSELI, GOYA, DAVID, RUNGE, FRIEDRICH, CONSTABLE, TURNER, GERICAULT, DELACROIX AND INGRES.)  
SUBJECT TO FINAL APPROVAL  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. CERVERA  
3 CREDITS
- ART 320 STUDIES IN THE HISTORY OF SCULPTURE  
THIS COURSE WILL DEAL WITH SPECIFIC PROBLEMS IN THE HISTORY OF SCULPTURE. IT IS DESIGNED TO FOCUS UPON SINGLE ARTISTS, TYPES OF COMMISSIONS, ASPECTS OF ICONOGRAPHY, NATIONAL OR PERIOD STYLES AS THEY COME UP IN THE HISTORY OF SCULPTURE. TOPICS WILL VARY BY SEMESTER AND INSTRUCTOR. CONSULT CURRENT COURSE ANNOUNCEMENT FOR SPECIFICS.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
STAFF  
3 CREDITS
- ART 321 MANNERISM IN THE VISUAL ARTS, 1520 TO 1600  
AN EXPLORATION OF THE NEW STYLE DEVELOPED IN ITALY IN REACTION TO RAPHAEL'S CLASSICISM WHICH SPREAD TO NORTHERN EUROPE BETWEEN THE HIGH RENAISSANCE AND THE BAROQUE. FROM THEORY AND CONTENT IN REFLECTION TO THE SOCIAL CRISSES ON THE REFORMATION AND THE COUNTER-REFORMATION. THE "PSYCHOLOGY" OF MANNERISM AND ITS RELATIONSHIP TO THE MODERN AGE.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. ARB  
3 CREDITS
- ART 330 STUDIES IN THE HISTORY OF ARCHITECTURE  
A TOPIC COURSE DESIGNED TO PROVIDE IN-DEPTH STUDY OF THE HISTORICAL AND CONTEMPORARY IDEAS, ISSUES AND MAJOR FIGURES IN ARCHITECTURE AND URBAN PLANNING. TOPICS WILL VARY BY SEMESTER AND INSTRUCTOR. CONSULT CURRENT COURSE ANNOUNCEMENT FOR SPECIFICS.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
STAFF  
3 CREDITS
- ART 335 THE AMERICAN VISION IN ART, 1860 TO 1900  
AMERICAN ART, ESPECIALLY PAINTING, IN THE SECOND HALF OF THE 19TH CENTURY. THE IMPACT OF SOCIAL AND INTELLECTUAL FORCES. PHOTOGRAPHY AND THE ILLUSTRATED NEWS WEEKS ON THE TRADITIONAL THEMES OF LANDSCAPE, PORTRAITURE AND GENRE.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. ARB  
3 CREDITS
- ART 339 TWENTIETH CENTURY ARCHITECTURE  
THEORY AND FORM IN TWENTIETH CENTURY ARCHITECTURE. THE COURSE WILL PRESENT A DETAILED EXAMINATION OF ARCHITECTURE IN BOTH EUROPE AND AMERICA SINCE 1900. SUBJECTS WILL INCLUDE ART NOUVEAU, DE STIJL, THE BAUHAUS, THE NEW INTERNATIONALISM VS. ART DECO STYLES, FASCIST AND CAPITALIST ARCHITECTURE OF THE THIRTIES AND FORTIES, MINIMALIST STYLES VS. REVIVALISM, THE SCULPTURAL AND MONUMENTAL VS. MINIMALIST ATTITUDES IN CONTEMPORARY ARCHITECTURE. SOME THOUGHT WILL BE GIVEN TO THE CONTRAST BETWEEN "POPULAR" AND "ELITIST" STYLES. CONSIDERABLE ATTENTION WILL BE GIVEN TO CONTEMPORARY THEORIES ON THE FUNCTION AND FORMS OF ARCHITECTURE.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. FERGUSON  
3 CREDITS
- ART 340 STUDIES IN THE HISTORY OF CRITICISM AND AESTHETICS  
A TOPIC COURSE IN THE ANALYSIS OF AESTHETICS AND ART CRITICISM DESIGNED TO PROVIDE A BETTER UNDERSTANDING OF ISSUES AND MAJOR DEVELOPMENTS IN THE HISTORY OF IDEAS. TOPICS WILL VARY BY SEMESTER AND INSTRUCTOR. CONSULT CURRENT COURSE ANNOUNCEMENT FOR SPECIFICS.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
STAFF  
3 CREDITS
- ART 347 SOURCES OF 20TH CENTURY PAINTING  
A STUDY OF CEZANNE, VAN GOGH AND GAUGUIN, THE SYMBOLISTS AND ART NOUVEAU, AND THE LATE 19TH CENTURY BREAK WITH THE ARTISTIC PREMISES OF THE RENAISSANCE.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. CERVERA  
3 CREDITS
- ART 349 MODERN SCULPTURE  
EMPHASIS ON THE 19TH CENTURY ORIGINS OF MODERN SCULPTURE AND THE RANGE OF SCULPTURAL EXPRESSION ACHIEVED DURING THE 20TH CENTURY.  
FIELD TRIPS REQUIRED.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. BUTLER  
3 CREDITS
- ART 368 THE MOVIES, 1930 TO 1950  
A STUDY OF THE HOLLYWOOD FILM FROM THE COMING OF SOUND TO THE COMING OF TELEVISION CONCENTRATING ON CERTAIN OF THE MAJOR GENRES - GANGSTER AND CRIME FILMS, THE MUSICAL, AND THE WESTERN - AND APPROACHING THEM IN TERMS OF THEME AND STRUCTURE, PRINCIPALLY AS A FORM OF POPULAR CULTURE. WEEKLY FILM VIEWINGS IN ADDITION TO THE REGULAR THREE CLASS HOURS PER WEEK.  
3 LECT HRS, 3 VIEWING HRS  
MR. RISSE  
3 CREDITS
- ART 370 NATURALISM AND REALISM IN ART  
CONSIDERING THE CONTROVERSY BEHIND THEIR DEFINITION, THE COURSE EXAMINES THESE IDEAS IN THE ART OF ANTIQUITY AND BY CONTRASTING RENAISSANCE AND BAROQUE CONCEPTS OF NATURALISM. SPECIAL STRESS WILL BE GIVEN TO NATURALISM AND REALISM IN THE 19TH CENTURY AND ON HOW THE ROLE OF PHOTOGRAPHY HAS CHANGED 20TH CENTURY IDEAS OF REALISM.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. BUTLER  
3 CREDITS
- ART 373 IMAGES OF WOMEN IN ART  
A LECTURE COURSE DEALING WITH THE VARIOUS WAYS IN WHICH WOMEN HAVE BEEN PORTRAYED IN PAINTING, SCULPTURE, AND PRINTS. TOPICS WILL DEAL WITH THE DEPICTION OF BOTH THE POSITIVE AND NEGATIVE ASPECTS OF WOMAN'S CONVENTIONAL ROLES. WOMAN AS ALLEGORY AND PORTRAITS OF WOMEN WILL BE EXAMINED AS WELL AS THE HISTORICAL SITUATION OF THE WOMAN ARTIST.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. APP  
3 CREDITS
- ART 381 DRAWING II  
CONTINUATION OF WORK BEGUN IN DRAWING I. INVOLVING PROBLEMS IN A NUMBER OF DRAWING MEDIA (INK, CHARCOAL, PENCIL, CHALK, ETC.) APPROACHED THROUGH WORK WITH STILL-LIFE, LANDSCAPES AND THE HUMAN FIGURE.  
PREREQUISITE: 3 COURSES IN ART AND WRITTEN PERMISSION  
3 LECT HRS  
STAFF  
3 CREDITS
- ART 382 DRAWING III  
CONTINUATION OF MAJOR CONCERNS IN DRAWING II WITH A NEW EMPHASIS ON THE INTEGRATION OF THESE ISSUES INTO A PICTORIAL STATEMENT.  
PREREQUISITE: DRAWING II AND WRITTEN PERMISSION  
3 LECT HRS  
STAFF  
3 CREDITS

- ART 383 PAINTING WORKSHOP  
384 SPECIFIC PROBLEMS ARE DEVELOPED IN OR THROUGH VARIOUS PAINTING MEDIA INCLUDING OIL, OPAQUE, WATERCOLOR, ACRYLICS. CONTENT WILL DIFFER FROM SEMESTER TO SEMESTER.  
PREREQUISITE: 3 STUDIO COURSES IN ART AND WRITTEN PERMISSION  
4 LECT HRS  
3 CREDITS  
STAFF
- ART 385 THREE-DIMENSIONAL WORKSHOP I II  
386 THIS COURSE TAKES UP ISSUES BASIC TO THREE-DIMENSIONAL FORM, SUCH AS PARTICULAR MATERIALS AND TECHNIQUES, OR IT MAY TAKE UP TOPICS TO BE SOLVED BY THREE-DIMENSIONAL MEANS. CONTENT DEVISED FOR A PARTICULAR SEMESTER WILL NOT BE REPEATED.  
PREREQUISITE: 3 STUDIO COURSES IN ART AND WRITTEN PERMISSION  
3 LECT HRS  
3 CREDITS  
STAFF
- ART 387 GRAPHICS WORKSHOP  
388 THIS COURSE WILL CONSIST OF A SERIES OF PROBLEMS IN PATTERN, SYSTEMS, COMPOSITION AND PERSONAL SYMBOLOLOGY MANIFESTED THROUGH SIMPLE PRINTING TECHNIQUES (LINOCUTS, STENCILS, ETC.) PLUS SOME USE OF COLOR PAPERS AND INKS. IT SHOULD BE OF PARTICULAR INTEREST TO THOSE STUDENTS WHO ANTICIPATE ART TEACHING CAREERS.  
PREREQUISITE: 3 STUDIO COURSES IN ART AND WRITTEN PERMISSION  
3 LECT HRS  
3 CREDITS  
STAFF
- ART 393 PHOTOGRAPHY II  
394 A CONTINUATION OF STUDIES BEGUN IN PHOTOGRAPHY I -ART 293-, WITH AN EXPLICIT ESCALATION NOT ONLY IN CONTENT, BUT IN EXPECTATION OF ACHIEVEMENT AS WELL. LECTURES, GROUP CRITIQUE, AND LABORATORY ASSIGNMENTS.  
PREREQUISITE: 3 COURSES IN ART AND WRITTEN PERMISSION  
2 LECT HRS, 2 LAB HRS  
3 CREDITS  
STAFF
- ART 394 PHOTOGRAPHY III  
395 STRESSING PERSONAL AND INDEPENDENT POINTS OF VIEW THROUGH LECTURES, GROUPS CRITIQUE, DISCUSSION MEETINGS, AND DARKROOM WORK.  
PREREQUISITE: PHOTOGRAPHY II AND PERMISSION OF STUDIO FACULTY  
S TO 6 STUDIO HRS INCLUDING LECT & LAB  
STAFF
- ART 395 FILM/VIDEO II  
396 A SECOND SEMESTER OF PRACTICE IN THE ORGANIZATION AND EXECUTION OF MOVING IMAGERY AND SOUND.  
PREREQUISITE: 3 COURSES IN ART AND WRITTEN PERMISSION  
3 LECT HRS, 2 LAB HRS  
3 CREDITS  
STAFF
- ART 411 THE CLASSICAL TRADITION IN WESTERN ART  
412 THE GRECO-ROMAN TRADITION IN ART AND PHILOLOGY IN PERIODIC RE-APPEARANCES OR REVIVALS OF CLASSICAL STYLE AND THEORY FROM THE MIDDLE AGES THROUGH THE PERIOD OF THE FIRST EMPIRE IN FRANCE.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
3 CREDITS  
STAFF
- ART 421 SCULPTURE, FORM AND MEANING  
422 AN INTENSIVE STUDY OF THE SPECIAL QUALITIES OF THE ART OF SCULPTURE: TYPES, TECHNIQUES, FUNCTION, ICONOGRAPHY AND STYLE EXPLORED IN LECTURES, DISCUSSIONS, AND FIELD TRIPS. PREFERENCE GIVEN TO SENIOR ART MAJORS.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
3 CREDITS  
MS. ARB
- ART 431 PORTRAITURE  
432 AN INVESTIGATION OF THE NATURE & SCOPE OF PORTRAITURE IN THE HISTORY OF ART. CONCENTRATING ON THE IDEAS THAT MOTIVATE THE MAKING OF HUMAN LIKENESS RATHER THAN ON THE VARIOUS CATEGORIES INDIVIDUAL, GROUP SELF, DONOR, STATE, ALLEGORICAL, ETC.  
PREREQUISITE: JUNIOR STANDING AND PERMISSION OF INSTRUCTOR  
3 LECT HRS  
3 CREDITS  
MS. ARB
- ART 451 HISTORY OF GRAPHIC ART  
452 A CLOSE EXAMINATION OF ORIGINAL PRINTS DESIGNED TO DEVELOP KNOWLEDGE OF THE TECHNICAL PROCESSES: WOODCUT, ENGRAVING, ETCHING, LITHOGRAPHY- AND THEIR EVOLUTION, AND TO INTRODUCE THE STUDENT TO CRITERIA OF CONNOISSEURSHIP. CONCENTRATION ON THE LEADING MASTERS SUCH AS MANTEGNA, DURER, REMBRANDT, BLAKE AND GOYA. MOST MEETINGS IN THE MUSEUM OF FINE ARTS, THE BOSTON PUBLIC LIBRARY AND THE FOGG MUSEUM. PREFERENCE GIVEN TO SENIOR ART MAJORS.  
PREREQUISITE: PREVIOUS WORK IN THE HISTORY OF ART AND PERMISSION OF INSTRUCTOR  
3 LECT HRS  
3 CREDITS  
STAFF
- ART 478 INDEPENDENT STUDY I  
479 AN INDEPENDENT INVESTIGATION OF A SPECIAL AREA UNDER THE SUPERVISION OF A QUALIFIED PROFESSOR. OPEN ONLY TO A VERY LIMITED NUMBER OF STUDENTS IN ANY ONE SEMESTER. A WRITTEN PROSPECTUS OF THE PROJECT IS REQUIRED OF APPLICANTS.  
PREREQUISITE: PERMISSION OF INSTRUCTOR AND DEPT CHAIRMAN  
HRS BY ARRANGEMENT  
3 CREDITS  
STAFF
- ART 479 INDEPENDENT STUDY II  
480 AN INDEPENDENT INVESTIGATION OF A SPECIAL AREA UNDER THE SUPERVISION OF A QUALIFIED PROFESSOR. OPEN ONLY TO A VERY LIMITED NUMBER OF STUDENTS IN ANY ONE SEMESTER. A WRITTEN PROSPECTUS OF THE PROJECT IS REQUIRED OF APPLICANTS.  
PREREQUISITE: PERMISSION OF INSTRUCTOR AND DEPT CHAIRMAN  
HRS BY ARRANGEMENT  
3 CREDITS  
STAFF
- ART 480 SEMINAR IN VISUAL STUDIES I  
481 DESIGNED PRIMARILY FOR THE ART MAJOR TO PROVIDE ADVANCED WORK IN AREAS AND TOPICS NOT NORMALLY OFFERED IN EXISTING COURSES. COURSE CONTENT WILL VARY WITH INSTRUCTOR. MAY BE REPEATED FOR CREDIT.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS, 4 LAB HRS  
3 CREDITS  
STAFF
- ART 481 SEMINAR IN VISUAL STUDIES II  
482 DESIGNED PRIMARILY FOR THE ART MAJOR TO PROVIDE ADVANCED WORK IN AREAS AND TOPICS NOT NORMALLY OFFERED IN EXISTING COURSES. COURSE CONTENT WILL VARY WITH INSTRUCTOR. MAY BE REPEATED FOR CREDIT.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS, 4 LAB HRS  
3 CREDITS  
STAFF
- ART 484 JUNIOR SEMINAR IN ART HISTORY  
485 A COURSE DESIGNED FOR THOSE STUDENTS BEYOND THE FRESHMAN YEAR WHO ARE CONSIDERING THE POSSIBILITY OF DOING GRADUATE OR PROFESSIONAL WORK IN THE HISTORY OF ART. WORK IS STRUCTURED SO THAT STUDENTS CONCENTRATE ON A NUMBER OF SMALL PROJECTS INDIVIDUALLY AND IN GROUPS IN ORDER TO EXAMINE THE DIFFERENT METHODS USED BY ART HISTORIANS. THE BIBLIOGRAPHY OF ART HISTORY, AND THE WAYS OF ORGANIZING RESEARCH AND PRESENTING MATERIAL VERBALLY WITH SLIDES. CAREER POSSIBILITIES AND THE NATURE OF GRADUATE WORK IN ART HISTORY ARE DISCUSSED.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
3 CREDITS  
MS RUTLER



# Exemption from Introductory Biology

496 SENIOR SEMINAR IN STUDIO  
THIS COURSE CONCENTRATES ON ISSUES ARISING OUT OF THREE SOURCES - SELECTED EXHIBITIONS, ASSIGNED READING ON PARTICULAR ARTISTS AND SCHOOLS, AND AREAS OF IMMEDIATE INTEREST TO INDIVIDUAL FACULTY ENGAGED IN CONDUCTING CLASS SESSIONS. ILLUSTRATED LECTURES, FIELD TRIPS, GROUP DISCUSSIONS, AND ORAL REPORT SESSIONS. A NUMBER OF FACULTY MEMBERS WILL PARTICIPATE IN THE WEEKLY SEMINARS.  
PREREQUISITE: 6 COURSES IN ART AND SENIOR STANDING  
1 CREDIT  
1 LECT HRS  
STAFF

497 SENIOR SEMINAR IN STUDIO  
THIS COURSE CONCENTRATES ON ISSUES ARISING OUT OF THREE SOURCES - SELECTED EXHIBITIONS, ASSIGNED READING ON PARTICULAR ARTISTS AND SCHOOLS, AND AREAS OF IMMEDIATE INTEREST TO INDIVIDUAL FACULTY ENGAGED IN CONDUCTING CLASS SESSIONS. ILLUSTRATED LECTURES, FIELD TRIPS, GROUP DISCUSSIONS, AND ORAL REPORT SESSIONS. A NUMBER OF FACULTY MEMBERS WILL PARTICIPATE IN THE WEEKLY SEMINARS.  
PREREQUISITE: 6 COURSES IN ART AND SENIOR RANK  
1 CREDIT  
1 LECT HRS  
STAFF

498 SPECIAL PROBLEMS - FIELD WORK I II  
AN INDEPENDENT PROJECT WITH AN OFF-CAMPUS FOCUS UNDER THE SUPERVISION OF A QUALIFIED PROFESSOR OR APPROVED AGENCY. OPEN TO A LIMITED NUMBER OF STUDENTS IN ANY SEMESTER. A WRITTEN PROSPECTUS OF THE PROJECT IS REQUIRED OF ALL APPLICANTS.  
PREREQUISITE: PERMISSION OF INSTRUCTOR AND DEPT CHAIRMAN  
HRS BY ARRANGEMENT  
1-3 CREDITS  
STAFF

496 CURRICULUM AND METHODS STUDENTS TEACHING - ART  
THE ISSUES, PRINCIPLES AND METHODS OF TEACHING ART IN THE SCHOOLS. SUPERVISION AND CRITIQUE OF PRACTICE TEACHING.  
PREREQUISITE: 6 HOURS EDUCATION COURSES AND ADMISSION TO THE TEACHER CERTIFICATION PROGRAM  
3 LECT HRS. 20 LAB HRS (PRACTICE TEACHING)  
9 CREDITS  
STAFF

## BIOLOGY

### Graduation Requirements

All Biology majors must take as general requirements: Biology 111-112, one year of Mathematics (with at least one semester of Calculus strongly recommended), Chemistry 103-104, and one year of Physics with laboratory (Physics 107-108, or 113-114 and 171-172 strongly recommended).

In addition to the preceding general requirements, Biology I majors take Bio 211, 241 and 254; plus 20 credit hours in other Biology courses of which 12 are to be 300 or above. With prior approval of the Department Chairman up to five of the twenty credit hours may be substituted by related courses outside of the Biology Department.

Biology II majors take Biology 211 and 252 and they must complete 23 additional credits in Biology or closely related subjects, at least 15 of which must be earned in Biology courses numbered 300 or higher, with laboratory.

The foregoing Biology I and II major requirements supersede requirements in effect until 1976-77. Students enrolled as Biology majors in 1975-76 or earlier may fulfill the old requirements or the new requirements as they are stated above. If course changes preclude both options, students should consult their respective Department Chairperson.

It is recommended that students take Biology 111-112 and a year of Mathematics in the freshman year. Biology 211 and 252 and Chemistry 103-104 should be taken in the sophomore year. Physics should be completed by the end of the junior year if possible. Organic Chemistry is strongly recommended.

Students may satisfy the Biology Department majors requirements for General Biology (Biology 111-112) and/or one year of the natural sciences core requirement through a special qualification program in biology. Interested students who have a strong background in secondary school biology should 1) contact the Biology Department for an interview and 2) take a written examination in biology to be offered prior to registration for the fall term. On the basis of the interview and the examination the student may be granted exemption from biology 101 and 102, biology 101-104 or Biology 111-112.

## Honors in Biology

To graduate with honors in Biology it is necessary to complete satisfactorily a program of at least 3 credits of independent study in Biology. This requirement can be fulfilled through the Independent Study Course, or the Nantucket Summer Program of Independent Projects. The Biology faculty will confer Departmental Honors upon students who:

1. have a 3.0 cumulative average
2. have obtained satisfactory grades in their advanced biology courses. (generally interpreted as no pass-fail enrollment and a 3.0 average in all biology courses) numbered 200 or above.
3. have written a thesis and given an oral presentation of their independent study project which the Biology faculty feel merits the awarding of honors. This presentation will usually be during the last week of classes, and the thesis is due one week prior to this.

## Graduate Program

A complete description of the graduate program in biology appears in a section on graduate programs at the end of this catalogue.

All 600 level courses are open to both undergraduate and graduate students.

|      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |
|------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 810L | 101 | THE BASIS OF LIFE<br>THE UNIQUENESS OF LIFE, WITHIN THE PHYSICAL UNIVERSE: THE MATTER AND ENERGY OF LIFE, THE GENETIC CODE, THE ORIGIN AND EVOLUTION OF LIFE, THE FUNCTION OF NERVOUS SYSTEMS, AN OVERVIEW FOR STUDENTS IN THE HUMANITIES AND SOCIAL SCIENCES, OF THOSE FEATURES WHICH DISTINGUISH LIVING ORGANISMS FROM NON-LIVING THINGS, NO BACKGROUND IN THE NATURAL SCIENCES IS REQUIRED.<br>3 LECT HRS<br>MR. WHITE                                                                                                                                                                                                                                           | 4 CREDITS |
| 810L | 102 | EVOLUTIONARY BIOLOGY<br>MENDELIAN AND POPULATION GENETICS, THE RELATIONSHIP BETWEEN ENVIRONMENT AND THE INHERITED ABILITY OF ORGANISMS TO ADAPT THE PROCESSES OF GENETIC CHANGE AND STABILITY THROUGH TIME. THOSE AREAS OF GENETICS, ECOLOGY AND EVOLUTION FROM A UNIFIED APPROACH TO THE STUDY OF ORGANISMS AND POPULATIONS, ALTHOUGH HUMAN APPLICATION AND SOCIAL CONCERNS WILL BE PRESENTED, THE COURSE WILL DRAW ITS PRIMARY SUBSTANCE FROM THE FUNDAMENTAL EXPERIMENTS AND DISCOVERIES.<br>3 LECT HRS. 1 DISC HOUR<br>MR. KAPLAN                                                                                                                               | 4 CREDITS |
| 810L | 103 | THE HUMAN ORGANISM<br>BIOLOGICAL CONCEPTS OF THE ORGANIZATION AND FUNCTION OF CELLS, TISSUES AND ORGANS WILL BE CONSIDERED, USING HUMAN EXAMPLES. MODELS WILL BE RELATED TO GOOD HEALTH AND DISEASE IN HUMANS, WITH LECTURES AND DISCUSSIONS ORIENTED WITHIN THE FRAMEWORK OF HUMAN PHYSIOLOGY. IN GENERAL TERMS THE COURSE WILL BE DIVIDED AS FOLLOWS:<br>A. THE FUNCTION OF CELLS AND THE INTERNAL ENVIRONMENT<br>B. TRANSPORT SYSTEMS AND HOMEOSTASIS<br>C. BODY FLUIDS AND METABOLISM<br>D. ENERGY TRANSDUCTION-RESPIRATION, DIGESTION<br>E. CONTROL MECHANISMS, ENDOCRINE<br>F. REPRODUCTION: MITOSIS, GENES AND DIFFERENTIATION<br>3 LECT HRS<br>MS. HARRISON | 4 CREDITS |



- BIOL 104 HUMAN BIOLOGY  
A ONE SEMESTER COURSE DESIGNED PRINCIPALLY FOR THOSE WHO DO NOT INTEND TO MAJOR IN BIOLOGY. PRINCIPLES OF BIOLOGY ARE TAUGHT USING THE HUMAN ORGANISM AS A REPRESENTATIVE OF BIOLOGICAL SYSTEMS AT SEVERAL LEVELS. SUBJECTS COVERED INCLUDE HUMAN EVOLUTION, GENETICS, REPRODUCTION AND DEVELOPMENT, AND THE IMPACT OF MAN ON OUR ENVIRONMENT.  
3 LECT HRS, 3 LAB HRS  
MR. SCHULTZ  
4 CREDITS
- BIOL 105 PLANTS AND HUMAN AFFAIRS  
THE ORIGIN, BOTANICAL RELATIONSHIPS, DOMESTICATION AND HISTORY OF ECONOMIC PLANTS WITH EMPHASIS ON MAN'S DEPENDENCE ON CULTIVATED PLANTS AND HIS INFLUENCE ON THE VEGETATION OF THE WORLD.  
3 LECT HRS, 3 LAB HRS  
MR. WILKES  
4 CREDITS
- BIOL 106 HUMAN BIOLOGY WITH WORKSHOP IN BIOETHICS  
STUDENTS ATTEND THE LECTURE SECTION OF BIO. 104, BUT THE LAB IS REPLACED BY A WORKSHOP IN BIOETHICS. A REVIEW OF SOCIAL AND ETHICAL PROBLEMS ARISING FROM PRESENT DEVELOPMENTS IN BIOLOGICAL RESEARCH, SUCH AS GENETIC ENGINEERING, THE POPULATION EXPLOSION, THE GREEN REVOLUTION, ETC. EMPHASIS WILL BE PLACED ON READING, WRITING, AND LIBRARY RESEARCH. THE WORKSHOP WILL NOT SATISFY LAB COURSE REQUIREMENTS FOR POTENTIAL BIOLOGY MAJORS.  
3 LECT HRS, 3 WORKSHOP HRS  
MR. ROSEN  
4 CREDITS
- BIOL 111 GENERAL BIOLOGY I  
AN INTEGRATED COURSE STRESSING THE PRINCIPLES OF BIOLOGY. LIFE PROCESSES ARE EXAMINED AT THE MOLECULAR, CELLULAR, ORGANISMAL AND POPULATION LEVELS. INTENDED FOR STUDENTS MAJORING IN BIOLOGY OR FOR NON-MAJORS WHO WISH TO TAKE ADVANCED BIOLOGY COURSES.  
3 LECT HRS, 3 LAB HRS  
STAFF  
4 CREDITS
- BIOL 112 GENERAL BIOLOGY II  
AN INTEGRATED COURSE STRESSING THE PRINCIPLES OF BIOLOGY. LIFE PROCESSES ARE EXAMINED AT THE MOLECULAR, CELLULAR, ORGANISMAL AND POPULATION LEVELS. INTENDED FOR STUDENTS MAJORING IN BIOLOGY OR FOR NON-MAJORS WHO WISH TO TAKE ADVANCED BIOLOGY COURSES.  
3 LECT HRS, 3 LAB HRS  
STAFF  
4 CREDITS
- BIOL 200 FIELD BIOLOGY ON NANTUCKET  
SUMMER ONLY, REQUIRES WRITTEN REPORTS ON ORIGINAL RESEARCH PROJECTS ON THE FIELD BIOLOGY OF NANTUCKET ISLAND. MEETS EVERY WEEKDAY FROM LATE JULY THROUGH AUGUST AT THE UNIVERSITY'S FIELD STATION ON NANTUCKET. LECTURES, SEMINARS AND INDIVIDUAL CONSULTATION ARRANGED. MAINTAINED STUDENTS LIVE AT THE STATION AND ARE RESPONSIBLE FOR MODEST EXPENSES.  
PREREQUISITE: BIOLOGY 111  
3 LECT HRS, 3 LAB HRS  
STAFF  
4 CREDITS
- BIOL 211 PHYSIOLOGY OF ORGANISMS  
A STUDY OF BASIC PLANT AND ANIMAL PHYSIOLOGY AT THE ORGANISMAL LEVEL WHICH WILL INCLUDE SUCH TOPICS AS UPTAKE OF MATERIALS, MAINTENANCE OF THE INTERNAL ENVIRONMENT, CONDUCTION OF MATERIALS, MOVEMENT AND COORDINATION.  
PREREQUISITE: BIOLOGY 112  
3 LECT HRS, 3 LAB HRS  
STAFF  
4 CREDITS
- BIOL 213 PHYSIOLOGY OF ORGANISMS  
LECTURE PORTION OF BIOLOGY 211  
PREREQUISITE: BIOLOGY 112  
3 LECT HRS  
STAFF  
3 CREDITS
- BIOL 220 MAINTENANCE PHYSIOLOGY OF PLANTS AND ANIMALS LECTURE  
THOSE ASPECTS OF MAINTENANCE PHYSIOLOGY, GROWTH AND REPRODUCTION OF PLANTS AND ANIMALS NOT DISCUSSED IN FIRST SEMESTER. TOPICS WILL INCLUDE PLANT AND ANIMAL NUTRITION, METABOLISM, WATER RELATIONSHIPS AND OTHER MECHANISMS OF BODY FUNCTIONS.  
PREREQUISITE: BIOLOGY 211 OR 213 OR EQUIVALENT  
3 LECT HRS  
MR. SAFWAT, MR. SHEERIN  
3 CREDITS
- BIOL 221 TAXONOMY OF SEED PLANTS LABORATORY  
COLLECTION AND IDENTIFICATION OF LOCAL FLORA. LABORATORY AND FIELD TRIPS. A COLLECTION OF FULLY IDENTIFIED DOCUMENTED HERBARIUM SPECIMENS WILL BE SUBMITTED BY EACH STUDENT.  
COREQUISITE: BIOLOGY 220  
6 LAB HRS, OCCASIONAL FIELD TRIPS  
STAFF  
2 CREDITS
- BIOL 232 INVERTEBRATE ZOOLOGY  
EVOLUTION, ECOLOGY, LIFE HISTORY AND MORPHOLOGY OF INVERTEBRATE ANIMALS. EMPHASIS PLACED ON LIVING REPRESENTATIVES OF LOCAL FAUNA, ESPECIALLY MARINE INVERTEBRATES.  
PREREQUISITE: BIOLOGY 111 OR 112  
3 LECT HRS, 6 LAB HRS  
STAFF  
5 CREDITS
- BIOL 234 INVERTEBRATE ZOOLOGY LECTURE  
LECTURE PORTION OF BIOLOGY 232. EVOLUTION, ECOLOGY, LIFE HISTORY AND MORPHOLOGY OF INVERTEBRATE ANIMALS. EMPHASIS PLACED ON LIVING REPRESENTATIVES OF LOCAL FAUNA, ESPECIALLY MARINE INVERTEBRATES.  
PREREQUISITE: BIOLOGY 111 AND 112  
3 LECT HRS  
STAFF  
3 CREDITS
- BIOL 236 HISTORY OF EVOLUTIONARY THOUGHT  
DEVELOPMENT OF EVOLUTIONARY THOUGHT FROM 1750 - PRESENT. THE COURSE WILL EXAMINE: SCIENTIFIC AND CULTURAL CONTEXTS THAT PRODUCED THE THEORY OF EVOLUTION, INTELLECTUAL DEVELOPMENT AND CONTRIBUTIONS OF LAMARCK, DARWIN AND WALLACE; SOCIAL IMPACT OF DARWINISM; ESTABLISHMENT OF MODERN EVOLUTIONARY THEORY; CONTEMPORARY CRITIQUES OF DARWINISM.  
PREREQUISITE: OPEN TO SCIENCE AND NON-SCIENCE MAJORS WITH SOPHOMORE OR UPPER LEVEL STANDING  
3 LECT HRS  
STAFF  
3 CREDITS
- BIOL 238 ORNITHOLOGY  
THE BIOLOGY OF BIRDS, WITH EMPHASIS ON PROBLEMS OF WIDER BIOLOGICAL INTEREST IN ECOLOGY AND BEHAVIOR. NORMALLY TAKEN IN CONJUNCTION WITH LABORATORY AND FIELD WORK. BIOL 239.  
PREREQUISITE: BIOLOGY 111-112 OR EQUIVALENT  
3 LECT HRS  
STAFF  
3 CREDITS
- BIOL 239 ORNITHOLOGY LABORATORY  
LABORATORY AND FIELD WORK IN ORNITHOLOGY (IN CONJUNCTION WITH BIOL 238.)  
PREREQUISITE: BIOLOGY 238  
3 LAB HRS  
STAFF  
1 CREDIT
- BIOL 241 BIOLOGY OF POPULATIONS I  
EVOLUTION AND ECOLOGY OF ANIMALS AND PLANTS. ASPECTS OF POPULATION GENETICS, POPULATION DYNAMICS, SOCIOBIOLOGY, RELATIONSHIPS BETWEEN SPECIES, AND COMMUNITY ECOLOGY. THIS COURSE HAS BEEN REVISED, AND WILL BE LESS MATHEMATICALLY DEMANDING THAN 241 IN RECENT YEARS. THE LABS IN THE FIRST PART OF SEMESTER WILL INVOLVE 6-HR FIELD TRIPS IN ALTERNATE WEEKS. (SIGN UP FOR ONE SESSION ON TUESDAY OR WILL BE WEEKLY 3-HR LABORATORY SESSIONS ON ECOLOGY, GENETICS AND ELEMENTARY DATA ANALYSES.  
PREREQUISITE: BIOLOGY 112. BIOLOGY 252 (CAN BE COREQUISITE) OR PERMISSION OF INSTRUCTOR  
STAFF

|      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |
|------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| BIOL | 243 | BIOLOGY OF POPULATIONS LECTURE I<br>THE LECTURE PORTION OF BIOLOGY 241.<br>PREREQUISITE: BIOLOGY 112. BIOLOGY 252 (CAN BE COREQUISITE) OR PERMISSION OF INSTRUCTOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |
| BIOL | 248 | ANIMAL BEHAVIOR<br>THE COURSE DEALS WITH TOPICS IN NEUROBIOLOGY AND OTHER ASPECTS OF THE PHYSIOLOGY OF BEHAVIOR: DEVELOPMENT, SOCIAL ORGANIZATION, COMMUNICATION AND ECOLOGICAL ASPECTS OF BEHAVIOR. IN A WIDE VARIETY OF ANIMALS. THE FOCUS IS ON WHOLE PATTERNS OF BEHAVIOR WITH EMPHASIS ON FUNCTION AND EVOLUTION.<br>PREREQUISITE: BIOLOGY 111-112 OR EQUIVALENT OR PERMISSION OF INSTRUCTOR                                                                                                                                                                                                                                                                                                                                                                        | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |
| BIOL | 249 | METHODS IN ETHOLOGY<br>OBSERVATIONAL AND EXPERIMENTAL ANALYSES OF THE BEHAVIOR OF A VARIETY OF SPECIES. LABORATORY STUDIES, FILMS, AND FIELD TRIPS.<br>PREREQUISITE: BIOLOGY 111-112. BIOLOGY 248 IS A COREQUISITE. (PSYCH 265 OR ANTH MAY BE SUBSTITUTED WITH CONSENT OF INSTRUCTOR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3 CREDITS |
|      |     | 5 LAR HRS, 1 DISC HR<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |
| BIOL | 250 | SOCIOBIOLOGY<br>THE SOCIETIES OF BOTH INVERTEBRATES AND VERTEBRATES WILL BE STUDIED: COLONIAL INVERTEBRATES AND VARIOUS LOOSE ASSOCIATIONS OF INDIVIDUALS WILL BE EXAMINED BRIEFLY. THE NATURE OF VARIOUS SOCIETIES THEIR ADAPTIVE SIGNIFICANCE THE BEHAVIORAL, PHYSIOLOGICAL AND ANATOMICAL MODIFICATIONS FOR SOCIAL LIFE. AND COMMUNICATION WITHIN AND AMONG SOCIETIES WILL BE STRESSED. THEORIES OF THE EVOLUTIONARY ORIGIN OF SOCIETIES WILL BE EXAMINED IN SOME DETAIL. THE LABORATORY WILL CONSIST OF ANALYSIS OF SOCIETIES AND SOCIAL INTERACTIONS STUDIED ON FILM AND IN THE FIELD.<br>PREREQUISITE: BIOLOGY 112 OR EQUIVALENT, OR 1 SEMESTER OF BIOLOGY AND 1 OF A CLOSELY RELATED SUBJECT.                                                                     | 4 CREDITS |
|      |     | 3 LECT HRS, 3 LAR HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |
| BIOL | 252 | GENETICS<br>THE BASIC PRINCIPLES OF HEREDITY THROUGH AN INTEGRATED PRESENTATION OF MOLECULAR AND CLASSICAL (MENDELIAN) GENETICS. TOPICS INCLUDE THE NATURE OF THE HEREDITARY MATERIAL, STRUCTURE OF CHROMOSOMES AND PATTERNS OF INHERITANCE.<br>PREREQUISITE: BIOLOGY 112. COREQUISITE: CHEM 103, 104                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 4 CREDITS |
|      |     | 3 LECT HRS, 3 LAR HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |
| BIOL | 254 | GENETICS LECTURE<br>THE LECTURE PORTION OF BIOLOGY 252.<br>PREREQUISITE: BIOLOGY 112                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |
| BIOL | 312 | DEVELOPMENTAL BIOLOGY<br>AN INTEGRATED COURSE TO INTRODUCE STUDENTS TO THE BASIC PROCESSES OF DEVELOPMENT AT THE ORGANISMAL LEVEL USING BOTH ANIMAL AND PLANT EXAMPLES. TOPICS INCLUDED WILL BE REPRODUCTION, GAMETOGENESIS, GROWTH, MORPHOGENESIS AND CYTO-DIFFERENTIATION.<br>PREREQUISITE: BIOLOGY 211 OR 213; CHEM 104                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5 CREDITS |
|      |     | 3 LECT HRS, 6 LAR HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |
| BIOL | 314 | DEVELOPMENTAL BIOLOGY LECTURE<br>AN INTEGRATED COURSE TO INTRODUCE STUDENTS TO THE BASIC PROCESSES OF DEVELOPMENT AT THE ORGANISMAL LEVEL USING BOTH ANIMAL AND PLANT KINGDOM EXAMPLES. TOPICS INCLUDED WILL BE REPRODUCTION, GAMETOGENESIS, GROWTH, MORPHOGENESIS AND CYTO-DIFFERENTIATION.<br>PREREQUISITE: BIOL 111, 112. CHEM 103 AND BIOL 211 OR 213                                                                                                                                                                                                                                                                                                                                                                                                                | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |
| BIOL | 316 | ANIMAL COORDINATION<br>NEUROUS AND HORMONAL MECHANISMS OF PHYSIOLOGICAL AND BEHAVIORAL CONTROL IN ANIMALS. BASIC PHYSIOLOGY OF SYSTEMS INVOLVED IN INTEGRATION. PHYSIOLOGY OF ENDOCRINES, NERVOUS SYSTEM, MUSCLES AND SENSE ORGANS AND THEIR INTERRELATIONSHIP IN ACHIEVING COORDINATION IN THE WHOLE ORGANISM. EMPHASIS ON VERTEBRATES, WITH SOME COMPARISONS TO INVERTEBRATE SYSTEMS.<br>PREREQUISITE: BIOL 211 OR 213 OR PERMISSION OF INSTRUCTOR                                                                                                                                                                                                                                                                                                                     | 5 CREDITS |
|      |     | 3 LECT HRS, 6 LAR HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |
| BIOL | 318 | ANIMAL COORDINATION LECTURE<br>THE LECTURE PORTION OF BIOLOGY 316.<br>PREREQUISITE: BIOLOGY 211 OR 213 OR PERMISSION OF INSTRUCTOR.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |
| BIOL | 320 | VASCULAR PLANTS<br>GROWTH STRUCTURE AND FUNCTION OF VASCULAR PLANTS WITH EMPHASIS ON THE PLANTAS A FUNCTIONING UNIT. PRACTICAL ASPECTS OF THE BOTANY OF HIGHER PLANTS WILL BE INCLUDED IN THE LABORATORY ALONG WITH DESCRIPTIVE AND EXPERIMENTAL WORK<br>PREREQUISITE: BIOLOGY 211 OR 213                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3 CREDITS |
|      |     | 3 LECT HRS, 6 LAR HRS.<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |
| BIOL | 322 | VASCULAR PLANTS LECTURE<br>THE LECTURE ONLY PORTION OF BIOLOGY 320<br>PREREQUISITE: BIOLOGY 211 OR 213                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |
| BIOL | 324 | BIOLOGY OF NON-SEED PLANTS<br>A STUDY OF THE MAJOR PLANT GROUPS EMPHASIZING LIVE CYCLES OF THE NON-SEED BEARING PLANTS AND THE CONTROL OF LIFE CYCLES BY ENVIRONMENTAL AND GENETIC FACTORS. ASPECTS OF AUTOTROPHIC AND HETEROTROPHIC NUTRITION OF PARTICULAR RELEVANCE TO THESE PLANT GROUPS AND THEIR PHYLOGENY WILL BE DISCUSSED. IN ADDITION TO THE USE OF PURE CULTURES, STUDENTS WILL ISOLATE FROM NATURE AND WILL CULTURE NON VASCULAR PLANT SPECIES. FOR APPROPRIATE SPECIES, PARTICULARLY FRESH WATER ALGAE, FUNGI, SLIME MOLDS, AND GAMETOPHYTES OF MOSS AND FERN, THE EXPERIMENTAL CONTROL OF LIFE CYCLES AND SEXUALITY WILL BE INVESTIGATED. BRIEF ATTENTION WILL BE GIVEN TO THE REPRODUCTIVE MORPHOLOGY OF SEED PLANTS.<br>PREREQUISITE: BIOLOGY 211 OR 213 | 5 CREDITS |
|      |     | 3 LECT HRS, 6 LAR HRS.<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |
| BIOL | 326 | BIOLOGY OF NON-SEED LECTURE<br>THE LECTURE PORTION OF BIOLOGY 324                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3 CREDITS |
|      |     | 3 LECT HRS.<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |
| BIOL | 342 | BIOLOGY OF POPULATIONS II<br>A CONTINUATION OF BIOLOGY 241 WITH FURTHER DEVELOPMENT OF TOPICS FROM THAT COURSE, AND ADDITIONAL MATERIALS. GENERAL PRESENTATION MORE RIGOROUS AND CONCEPTUALLY DEMANDING, WITH MORE MATHEMATICS AND MORE THEORY THAN BIOLOGY 241. SOME KNOWLEDGE OF STATISTICS AND CALCULUS ADVISED.<br>PREREQUISITE: BIOLOGY 241 OR PERMISSION OF INSTRUCTOR                                                                                                                                                                                                                                                                                                                                                                                             | 4 CREDITS |
|      |     | 3 LECT HRS, 3 LAR HRS.<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |
| BIOL | 344 | BIOLOGY OF POPULATIONS LECTURE II<br>THE LECTURE PORTION OF BIOL 342<br>PREREQUISITE: BIOLOGY 243 OR PERMISSION OF INSTRUCTOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |



|      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             |      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |
|------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| BIOL | 371 | <u>METHODS IN CELL BIOLOGY I</u><br>THIS IS THE LABORATORY TO ACCOMPANY BIOLOGY 273-274. "BIOLOGY OF CELLS". THE LABORATORY IS COMPRISED OF 5 DIFFERENT TRACKS, EACH DEALING WITH SOME ASPECTS OF CELL FUNCTION. EACH 7 WEEK TRACK IS AN AUTONOMOUS UNIT, WITH A MINIMUM OF ONE HOUR LECTURE, AND 5 HOURS OF LABORATORY PER WEEK. EACH STUDENT MUST TAKE 2 TRACKS PER SEMESTER.<br>PREREQUISITE OR CO-REQUISITE: BIOLOGY 373-374 OR EQUIVALENT<br>1 LECT HR. 5 LAB HRS.<br>STAFF                                                                                      | 3 CREDITS   | BIOL | 525 | <u>INDEPENDENT STUDY I</u><br>DIRECTED RESEARCH ON VANTUCKET. SUMMER ONLY. REQUIRES WRITTEN REPORTS ON ORIGINAL RESEARCH PROJECTS DONE AT UNIVERSITY FIELD STATION UNDER THE DIRECTION OF A SPECIFIC STAFF MEMBER. IN GENERAL, PROJECTS WILL BE CARRIED OUT DURING THE FIRST HALF OF THE SUMMER, BUT BY ARRANGEMENT, SOME WORK MAY BE ACCOMPLISHED AT OTHER TIMES DURING THE YEAR. THE PROJECT SHOULD BE PLANNED WELL IN ADVANCE OF THE TIME THAT THE FIELD WORK IS TO BE DONE. MAINLAND STUDENTS LIVE AT THE FIELD STATION AND ARE RESPONSIBLE FOR MODEST EXPENSES.<br>PREREQUISITE: PREVIOUS EXPERIENCE IN THE FIELD BIOLOGY, SUBSTANTIAL BACKGROUND IN BIOLOGY AND RELATED SUBJECTS AND PERMISSION OF THE INSTRUCTORS.<br>HOURS BY ARRANGEMENT<br>STAFF | 1-6 CREDITS |
| BIOL | 372 | <u>METHODS IN CELL BIOLOGY II</u><br>THIS IS THE LABORATORY TO ACCOMPANY BIOLOGY 373-374. "BIOLOGY OF CELLS". THE LABORATORY IS COMPRISED OF 5 DIFFERENT TRACKS, EACH DEALING WITH SOME ASPECTS OF CELL FUNCTION. EACH 7 WEEK TRACK IS AN AUTONOMOUS UNIT, WITH A MINIMUM OF ONE HOUR LECTURE, AND 5 HOURS OF LABORATORY PER WEEK. EACH STUDENT MUST TAKE 2 TRACKS PER SEMESTER IN EACH OF THE TRACKS.<br>PREREQUISITE OR CO-REQUISITE: BIOLOGY 373-374 OR EQUIVALENT<br>1 LECT HR. 5 LAB HOURS<br>STAFF                                                              | 3 CREDITS   | HIOL | 546 | <u>CURRICULUM AND METHODS STUDENTS TEACHING - BIOLOGY</u><br>THE ISSUES, PRINCIPLES AND METHODS OF TEACHING BIOLOGY IN THE SCHOOLS. SUPERVISION AND CRITIQUE OF PRACTICE TEACHING. BIOLOGY MAJORS ARE ADVISED TO CHECK SCHEDULING PRACTICE TEACHING WITH DEPARTMENT.<br>CREDIT TOWARD MAJOR REQUIREMENT AT THE DISCRETION OF THE DEPARTMENT<br>PREREQUISITE: 6 HOURS EDUCATION COURSES AND ADMISSION TO THE TEACHER CERTIFICATION PROGRAM<br>3 LECT HRS, 20 LAB HRS (PRACTICE TEACHING)<br>STAFF                                                                                                                                                                                                                                                           | 9 CREDITS   |
| BIOL | 373 | <u>BIOLOGY OF CELLS I</u><br>THE CYTOLOGY AND FINE STRUCTURE OF CELLS IN RELATION TO THE PRODUCTION OF ENERGY FOR GROWTH AND REPRODUCTION. THE CHEMISTRY OF THE LIFE PROCESS CONSIDERED IN DETAIL AS A TOOL FOR INQUIRY INTO CURRENT PROBLEMS IN BIOLOGY.<br>PREREQUISITE: BIOLOGY 211 OR 213; PREREQUISITE OR CO-REQUISITE ORGANIC CHEMISTRY<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                  | 3 CREDITS   | HIOL | 604 | <u>BIOLOGY OF CITIES</u><br>ASPECTS OF THE ORIGIN AND DEVELOPMENT OF CITIES RELEVANT TO HUMAN BIOLOGY. FOOD, AIR, WATER, ENERGY, WASTE AND FLOW OF THOSE RESOURCES INTO AND OUT FROM CITIES.<br>PREREQUISITE: INTRODUCTORY BIOLOGY<br>3 LECT-DISC HRS AND ADDITIONAL FIELD TRIPS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3 CREDITS   |
| BIOL | 374 | <u>BIOLOGY OF CELLS II</u><br>THE STRUCTURE AND FUNCTION OF THE NUCLEUS. THE BIOCHEMICAL MECHANISMS OF GROWTH AND REPRODUCTION AT THE MOLECULAR LEVEL.<br>PREREQUISITE: BIOLOGY 373<br>3 LECT HRS.<br>STAFF                                                                                                                                                                                                                                                                                                                                                           | 3 CREDITS   | BIOL | 610 | <u>ETHNOBOTANY</u><br>REVIEW OF STUDIES ON PLANT USE BY PRIMITIVE SOCIETIES IN HISTORIC AND PREHISTORIC TIMES. ORDINARILY OFFERED IN CONJUNCTION WITH BIOLOGY 613.<br>PREREQUISITE: PERMISSION OF INSTRUCTOR, BIOLOGY 105,220 RECOMMENDED<br>2 SEMINAR OR TUTORIAL HOURS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 CREDITS   |
| BIOL | 478 | <u>INDEPENDENT STUDY I</u><br>AN OPPORTUNITY FOR QUALIFIED, ADVANCED STUDENTS TO WORK ON A SPECIALIZED TOPIC OR RESEARCH PROJECT IN BIOLOGY UNDER THE GUIDANCE OF A FACULTY ADVISOR. IT IS OPEN TO SENIORS AND 2ND SEMESTER JUNIORS. THE COURSE WILL NORMALLY BE TAKEN FOR 3 CREDITS PER SEMESTER. ENROLLMENT MAY BE FOR ONE SEMESTER, BUT STUDENTS ARE STRONGLY URGED TO ENROLL FOR BIOLOGY 478 AT SO. THIS COURSE CAN BE TAKEN IN THE SUMMER.<br>PREREQUISITE: 2ND SEMESTER JUNIOR STANDING AND PERMISSION OF A RESEARCH DIRECTOR.<br>HOURS BY ARRANGEMENT<br>STAFF | 1-3 CREDITS | HIOL | 613 | <u>ARCHEOLOGICAL BOTANY</u><br>LABORATORY TUTORIAL. RECOVERY, IDENTIFICATION AND ANALYSIS OF MACROSCOPIC REMAINS, POLLEN AND SPORES FROM ARCHEOLOGICAL AND GEOLOGICAL DEPOSITS. INTERPRETATION OF THE DATA DERIVED AND THEIR BOTANICAL, ARCHEOLOGICAL AND PALEOECOLOGICAL APPLICATIONS.<br>PREREQUISITE: PERMISSION OF INSTRUCTOR, ORDINARILY BIOLOGY 610 WILL BE REQUIRED. NUMBER OF CREDIT HOURS WILL BE DETERMINED BY PRIOR CONSULTATION WITH INSTRUCTOR.<br>3 LAB-DISC HRS PER CREDIT<br>MR. KAPLAN                                                                                                                                                                                                                                                    | 2-5 CREDITS |
| BIOL | 479 | <u>INDEPENDENT STUDY II</u><br>SAME AS BIOLOGY 478. MAY BE TAKEN DURING THE SUMMER.<br>PREREQUISITE: 2ND SEMESTER JUNIOR STANDING AND PERMISSION OF A RESEARCH DIRECTOR.<br>HOURS BY ARRANGEMENT<br>STAFF                                                                                                                                                                                                                                                                                                                                                             | 1-3 CREDITS | HIOL | 618 | <u>EVOLUTION UNDER DOMESTICATION</u><br>THE ORIGIN, EVOLUTION AND PHYLOGENETIC RELATIONSHIPS OF DOMESTICATED AND SEMI-DOMESTICATED PLANTS AND ANIMALS; THE INFLUENCE OF CROPPING AND HERDING ON NATURAL FLORAS AND FAUNAS OF THE WORLD.<br>PREREQUISITE: BIOLOGY 241-242 OR EQUIVALENT AND PERMISSION OF INSTRUCTOR.<br>3 LECT HRS AND SATURDAY FIELD TRIPS<br>MR. WEAVER, MR. WILKES                                                                                                                                                                                                                                                                                                                                                                      | 3 CREDITS   |
| BIOL | 481 | <u>SPECIAL TOPICS I</u><br>DETAILED STUDY OF A SPECIALIZED FIELD OF BIOLOGY. SEVERAL TOPICS MAY BE OFFERED EACH SEMESTER.<br>PREREQUISITE: PERMISSION OF INSTRUCTOR<br>HRS BY ARRANGEMENT<br>STAFF                                                                                                                                                                                                                                                                                                                                                                    | 1-3 CREDITS |      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |
| BIOL | 482 | <u>SPECIAL TOPICS II</u><br>DETAILED STUDY OF A SPECIALIZED FIELD OF BIOLOGY. SEVERAL TOPICS MAY BE OFFERED EACH SEMESTER.<br>PREREQUISITE: PERMISSION OF INSTRUCTOR<br>HRS BY ARRANGEMENT<br>STAFF                                                                                                                                                                                                                                                                                                                                                                   | 1-3 CREDITS |      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |



- BIOL 630 NATURAL HISTORY OF MARINE INVERTEBRATES  
A LECTURE AND FIELD COURSE, DEVOTED TO THE EXAMINATION OF CONVERGENT AND DIVERGENT ECOLOGICAL, BEHAVIORAL AND MORPHOLOGICAL ADAPTATIONS OF MARINE ORGANISMS IN DIFFERENT HABITATS. THE COURSE WILL DRAW HEAVILY ON THE RESOURCES OF BOSTON HARBOR. THE FIRST HALF OF THE SEMESTER CONSISTS OF LECTURES AND DEMONSTRATION LABORATORIES; THE SECOND HALF INCLUDES WEEKLY FIELD-TRIPS.  
THE FIRST HALF OF THE COURSE WILL BE INDOOR LECTURES -3/WK- AND DEMONSTRATION LABORATORIES -1MR/WK-. THE SECOND HALF WILL HAVE 1-2 LECTURES/WK AND ONE 4 HR FIELD TRIP/WK.  
PREREQUISITE: BIOLOGY 211 OR BIOLOGY 341-342 OR 234 AND/OR PERMISSION OF INSTRUCTOR.  
MR. MENGE
- BIOL 639 ADVANCED ECOLOGY  
CONCENTRATION ON IMPORTANT CONCEPTS OF POPULATION AND COMMUNITY ECOLOGY. TOPICS COVERED INCLUDE POPULATION DYNAMICS, LIFE HISTORY STRATEGIES, THEORY OF R- AND K- SELECTION, COMPETITION, PREDATION, COMMUNITY ORGANIZATION, AND SPECIES DIVERSITY. PARTICULAR EMPHASIS IS PLACED ON THE RELATIONSHIP BETWEEN THEORETICAL AND EMPIRICAL ECOLOGY. A WEEKLY TUTORIAL WILL PROVIDE OPPORTUNITY FOR GREATER DISCUSSION OF MATERIAL COVERED IN LECTURE.  
PREREQUISITE: BIOLOGY 341-342-OR PERMISSION OF INSTRUCTOR.  
2 LECT HRS, 1 DISC HR  
MR. MENGE 3 CREDITS
- BIOL 642 BIOGEOGRAPHY  
A STUDY OF GEOGRAPHICAL DISTRIBUTION PATTERNS IN PLANTS AND ANIMALS. INCLUDES HISTORICAL AND DESCRIPTIVE ASPECTS OF THE DISTRIBUTIONS OF COMPARATIVE TESTS OF ISLAND BIOGEOGRAPHY THEORY, THE POPULATION GENETICS AND EVOLUTIONARY STRATEGIES OF COLONIZING SPECIES. LECTURES BY INSTRUCTOR, ONE DISCUSSION SESSION PER WEEK, INDEPENDENT RESEARCH BY STUDENTS THAT WILL BE PRESENTED TO THE CLASS IN SEMINAR FORM.  
PREREQUISITE: BIOLOGY 341-342 OR EQUIVALENT. SOME KNOWLEDGE OF STATISTICS AND CALCULUS HIGHLY RECOMMENDED.  
MR. REX
- BIOL 644 MARINE BOTANY  
THE SYSTEMATICS AND ECOLOGY OF MARINE PLANTS, WITH EMPHASIS ON THE ALGAE. THE CURRENT LITERATURE IS EMPLOYED TO DELINEATE UNSOLVED PROBLEMS.  
PREREQUISITE: BIOLOGY 211-341 AND BIOLOGY 241-242 AND/OR PERMISSION OF INSTRUCTOR.  
STAFF 4 CREDITS
- BIOL 650 ADVANCED ETHNOLOGY  
EXAMINATION IN DEPTH OF TOPICS IN THE ETHNOLOGICAL STUDY OF BEHAVIOR -ETHNOLOGY- WITH PARTICULAR REFERENCE TO COMMUNICATION AND THE EVOLUTION OF SOCIAL BEHAVIOR. THERE WILL BE LECTURE-DISCUSSIONS AND LAB EXERCISES. ALSO FIELD TRIPS.  
FOR GRADUATE STUDENTS AND SENIORS WITH APPROPRIATE BACKGROUND IN BIOLOGY 211 AND 341, OR PSYCHOLOGY 245, AND CONSENT OF INSTRUCTOR.  
MR. MATCH 2-6 CREDITS
- BIOL 660 SEMINAR IN DEVELOPMENTAL BIOLOGY  
PREREQUISITE: BIOLOGY 211 AND/OR PERMISSION OF INSTRUCTOR  
3 SEM-01SC HRS  
STAFF 3 CREDITS
- BIOL 662 PHOTOBIOLOGY  
THE PHOTOCHEMICAL REACTIONS THAT OCCUR IN BIOLOGICAL SYSTEMS. MAJOR TONIC AREAS ARE 1. PROPERTIES OF LIGHT ENERGY 2. UTILIZATION OF LIGHT ENERGY BY PHOTOSYNTHETIC ORGANISMS 3. MECHANISM OF VISUAL TRANSDUCTION 4. PHOTOCHEMICAL TRIGGERING MECHANISMS FOR DEVELOPMENTAL PROCESSES.  
3 LECT HRS  
MR. MAGAR, MR. WHITE 3 CREDITS
- BIOL 664 SEMINAR IN NEUROBIOLOGY  
STRUCTURE, FUNCTION AND DEVELOPMENT OF SENSORY RECEPTORS, NEURONS AND MUSCLES.  
PREREQUISITE: BIOLOGY 211 AND/OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. WHITE, MS. KIMEL, MS. BENNETT, MS. VAN UMMERSEN 3 CREDITS
- BIOL 668 ADVANCED PHYSIOLOGY  
EXPERIMENTAL STUDIES ON TWO OR THREE SELECTED AREAS OF ORGANISMAL AND CELLULAR PHYSIOLOGY WILL BE CONDUCTED IN DEPTH EACH TIME THE COURSE IS OFFERED (PROBABLY SPRING TERM EACH YEAR). STUDIES OF SENSORY AND NERVOUS SYSTEMS AND OF MEMBRANE TRANSPORT WILL BE THE AREAS COVERED. PROVISIONS WILL BE MADE FOR INDEPENDENT PROJECTS DURING THE COURSE. ONE WEEKLY SEMINAR PLUS ONE WEEKLY LAB MEETING. OPEN TO GRADUATE STUDENTS AND TO QUALIFIED ADVANCED UNDERGRADUATES.  
PREREQUISITE: BIOLOGY 216 OR 372 OR EQUIVALENT; ORGANIC CHEMISTRY; PHYSICS; ALSO PERMISSION OF INSTRUCTORS.  
1 SEMINAR HR; 3-4 LAB HRS  
MS. BENNET, MR. SHEERIN, MR. LANGFORD, MR. WHITE 3-4 CREDITS
- BIOL 670 TISSUE AND ORGAN CULTURE  
METHODS OF PLANT AND ANIMAL TISSUE AND ORGAN CULTURE WILL BE PRESENTED WITH SPECIAL EMPHASIS ON PROBLEMS OF DIFFERENTIATION AND MORPHOGENESIS IN VITRO. INTRODUCTION OF CERTAIN TECHNIQUES NOW USED IN PLANT PROTOPLAST CULTURE AND FOR HYBRIDIZATION OF SOMATIC CELLS IN PLANTS AND ANIMALS. PROVISIONS WILL BE MADE FOR INDEPENDENT PROJECTS DURING THE COURSE.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
1 LECT HR, 6 LAB HRS  
MR. SAFVAT, MS. VAN UMMERSEN 3 CREDITS
- BIOL 672-673 DIRECTED READINGS IN BIOLOGY  
SELECTED READINGS IN ADVANCED AREAS OF BIOLOGY WITH GUIDANCE AND REGULAR DISCUSSION.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
STAFF 1 CREDIT
- BLACK STUDIES
- BLKSTY 100 INTRODUCTION TO BLACK LITERATURE  
SURVEY COURSE OF BLACK LITERATURE FROM SLAVERY THROUGH PRESENT TIMES.  
3 LECT HRS  
MS. MONTICHO 3 CREDITS
- BLKSTY 102 THE HISTORY OF BLACK EDUCATION  
3 LECT HRS  
STAFF 3 CREDITS
- BLKSTY 104 DRUG ABUSE AND THE BLACK COMMUNITY  
AN OVERVIEW OF THE HISTORY AND CURRENT PROBLEMS EVOLVING FROM DRUG ABUSE IN BLACK URBAN COMMUNITIES IN THE UNITED STATES. DISCRIMINATION, PREJUDICE, LIMITED ACCESS TO OPPORTUNITY STRUCTURES, TREATMENT FOR THE USE OF DRUGS, THE LAW, COMMUNITY INSTITUTIONS, AND VALUE SYSTEMS ARE EXAMINED AS THEY PERTAIN TO DRUG USE IN THE BLACK COMMUNITY.  
3 LECT HRS  
MR. WILLIAMS 3 CREDITS
- BLKSTY 108 BLACK SOCIAL MOVEMENTS  
CONCEPTS OF SOCIAL MOVEMENTS AS WELL AS THE APPEARANCE OF SOCIAL MOVEMENTS AMONG BLACK AMERICANS IN THE 19TH CENTURY ARE EXAMINED. EXAMINATION OF 20TH CENTURY BLACK SOCIAL MOVEMENTS, ESPECIALLY MARCUS GARVEY'S MOVEMENT, NATION OF ISLAM, THE CIVIL RIGHTS MOVEMENT AND BLACK POWER MOVEMENT.  
PREREQUISITE- A COURSE IN SOCIOLOGY, POLITICAL SCIENCE OR AFRO AMERICAN HISTORY.  
3 LECT HRS  
MR. EJOFODOMI 3 CREDITS
- BLKSTY 110 INTRODUCTION TO BLACK STUDIES I  
AN INTRODUCTION TO THE KEY ISSUES IN BLACK STUDIES. AN OUTLINE OF THE HISTORY OF BLACKS IN AFRICA, CANADA, THE WEST INDIES AND THE

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |  |           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--|-----------|
| UNITED STATES TO 1865.<br>3 LECT HRS<br>MR. EJOFODOMI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 4 CREDITS |  |           |
| BLKSTY 111 INTRODUCTION TO BLACK STUDIES II<br>AN INTRODUCTION TO THE MAJOR ISSUES, PROBLEMS AND METHODS OF<br>RESEARCH RELATING TO BLACK STUDIES. TOPICAL APPROACH TO THE STUDY OF<br>BLACK HISTORY FROM 1865 TO THE PRESENT.<br>3 LECT HRS<br>MR. EJOFODOMI                                                                                                                                                                                                                                                                                                                                                         | 4 CREDITS |  |           |
| RLKSTY 201 ROOTS OF THE BLACK FAMILY<br>AN EXPLORATION OF THE SOCIAL, ECONOMIC AND RELIGIOUS ISSUES AFFECTING<br>THE BLACK FAMILY.<br>3 LECT HRS<br>MR. BROWN                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3 CREDITS |  |           |
| BLKSTY 301 BLACK INTELLECTUAL THOUGHT<br>A SURVEY COURSE OF THE SIGNIFICANT WRITINGS OF BLACK AMERICANS FROM<br>THE PERIOD OF EMANCIPATION TO THE PRESENT. WITH SPECIAL REFERENCE TO<br>THE ISSUES CONCERNING THE EDUCATIONAL, POLITICAL, SOCIOLOGICAL AND<br>PSYCHOLOGICAL STATUS OF BLACKS IN THE UNITED STATES.<br>3 LECT HRS<br>MR. HARE                                                                                                                                                                                                                                                                          | 3 CREDITS |  |           |
| BLKSTY 440 TOPICS IN AFRO-AMERICAN STUDIES<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3 CREDITS |  |           |
| BLKSTY 448 BLACK STUDIES SENIOR THESIS I, II<br>489 STUDY IN DEPTH OF A TOPIC CHOSEN BY THE STUDENT IN CONSULTATION WITH<br>AN HONORS ADVISER AND A PAPER WRITTEN WITH THE APPROVAL AND UNDER THE<br>DIRECTION OF AN HONORS ADVISER. NORMALLY RELATED TO WORK DONE IN<br>THE HONORS SEMINAR. HONORS AWARDED ON THE BASIS OF PERFORMANCE IN THE<br>HONORS SEMINAR. EVALUATION OF THE PAPER BY THE AFRO-AMERICAN STUDIES<br>CONCENTRATION COMMITTEE. AND 3.0 OVERALL AVERAGE.<br>PREREQUISITE: BLACK STUDIES 448 AND 449 AND PERMISSION OF THE BLACK<br>STUDIES CONCENTRATION COMMITTEE.<br>HRS BY ARRANGEMENT<br>STAFF | 3 CREDITS |  |           |
| BLKSTY 498 BLACK STUDIES HONORS SEMINAR I, II<br>499 AN INTERDISCIPLINARY SEMINAR FOR STUDENTS ADMITTED TO OPTION B,<br>HONORS, AND TO A LIMITED NUMBER OF OTHER HIGHLY QUALIFIED STUDENTS<br>PARTICIPATING IN THE OPTION A PROGRAM.<br>PREREQUISITE: 3.0 OVERALL AVERAGE AND PERMISSION OF THE BLACK<br>STUDIES CONCENTRATION COMMITTEE.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                      | 3 CREDITS |  |           |
| CHEMISTRY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |  |           |
| Graduation Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |  |           |
| Chemistry majors will take a basic group of courses in Chemistry, Mathematics<br>and Physics which will satisfy usual requirements appropriate to pre-professional<br>training in Chemistry or teaching or to certain interdisciplinary fields of<br>study.                                                                                                                                                                                                                                                                                                                                                           |           |  |           |
| All majors in Chemistry are required to take Chemistry 103-104, 153-154, 198,<br>241-242 and 269-270; Mathematics 150-151 and Physics 113-114 and either 171-172<br>or 181-182 laboratories. Students interested in majoring in Chemistry should<br>immediately contact the chemistry department to be assigned a faculty advisor<br>who will help plan a sequence of courses suitable to the student's interests.                                                                                                                                                                                                    |           |  |           |
| <u>Graduate Program</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |  |           |
| A complete description of the graduate program in Chemistry appears in a section<br>on graduate programs at the end of this catalogue.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |  |           |
| CHEM 101 CHEMICAL SCIENCE I<br>FIRST SEMESTER OF A ONE-YEAR INTRODUCTORY COURSE FOR NON-SCIENCE<br>MAJORS. THE BASIC PRINCIPLES OF ATOMIC STRUCTURE, MOLECULAR<br>STRUCTURE AND CHEMICAL CHANGE. TOPICS INCLUDE ATOMIC THEORY, THE<br>PERIODIC TABLE, CHEMICAL BONDING AND THERMOCHEMISTRY.<br>3 LECT HRS, 1 DISC HR<br>MR. ZOMPA                                                                                                                                                                                                                                                                                     |           |  | 4 CREDITS |
| CHEM 102 CHEMICAL SCIENCE II<br>SYSTEMATIC DESCRIPTIVE CHEMISTRY AND THE CHEMISTRY OF BIOLOGICAL<br>SUBSTANCES.<br>3 LECT HRS, 1 DISC HR<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |  | 4 CREDITS |
| CHEM 103 CHEMICAL PRINCIPLES I<br>INTRODUCTION TO THE FUNDAMENTAL PRINCIPLES OF CHEMISTRY INCLUDING<br>STRUCTURE, THE PERIODIC TABLE OF THE ELEMENTS, CHEMICAL BONDING AND<br>MOLECULAR STRUCTURE, STATES OF MATTER BASED ON KINETIC THEORY,<br>CHEMICAL KINETICS, EQUILIBRIA, AND ELEMENTARY THERMODYNAMICS.<br>LABORATORY WORK PRESENTS AN INTRODUCTION TO METHODS OF<br>QUANTITATIVE CHEMICAL TECHNIQUES.<br>3 LECT HRS, 3 LAB HRS, (1 DISC HR OPTIONAL)<br>MR. WEIRRECHT                                                                                                                                          |           |  | 5 CREDITS |
| CHEM 104 CHEMICAL PRINCIPLES II<br>INTRODUCTION TO ELECTROCHEMISTRY, OXIDATION-REDUCTION REACTIONS,<br>ACID-BASE SYSTEMS, AND A SURVEY OF THE CHEMICAL PROPERTIES OF<br>ELEMENTS BASED ON PRINCIPLES ALREADY INTRODUCED. LABORATORY WORK<br>PRESENTS QUALITATIVE AND QUANTITATIVE ANALYSIS.<br>PREREQUISITE: CHEMISTRY 103<br>3 LECT HRS, 3 LAB HRS, (1 DISC HR OPTIONAL)<br>STAFF                                                                                                                                                                                                                                    |           |  | 5 CREDITS |
| CHEM 153 ORGANIC CHEMISTRY I<br>AN INTENSIVE SURVEY OF STRUCTURE, REACTIONS AND SYNTHESIS OF THE MAIN<br>CLASSES OF ORGANIC COMPOUNDS. LABORATORY ILLUSTRATES THE PREPARATION,<br>PURIFICATION AND IDENTIFICATION OF ORGANIC COMPOUNDS BY CLASSICAL<br>AND INSTRUMENTAL METHODS.<br>PREREQUISITE: CHEMISTRY 104<br>3 LECT HRS, 3 LAB HRS, 1 DISC HR<br>MR. ANSELME, MR. BECKER                                                                                                                                                                                                                                        |           |  | 5 CREDITS |
| CHEM 154 ORGANIC CHEMISTRY II<br>AN INTENSIVE SURVEY OF STRUCTURE, REACTIONS AND SYNTHESIS OF THE MAIN<br>CLASSES OF ORGANIC COMPOUNDS. LABORATORY ILLUSTRATES THE PREPARATION,<br>PURIFICATION AND IDENTIFICATION OF ORGANIC COMPOUNDS BY CLASSICAL<br>AND INSTRUMENTAL METHODS.<br>PREREQUISITE: CHEMISTRY 104<br>3 LECT HRS, 3 LAB HRS, 1 DISC HR<br>STAFF                                                                                                                                                                                                                                                         |           |  | 5 CREDITS |
| CHEM 198 CHEMICAL PROBLEM SOLVING<br>TECHNIQUES OF SOLVING PROBLEMS ARISING IN CHEMISTRY IN GENERAL AND<br>PHYSICAL CHEMISTRY IN PARTICULAR. THIS COURSE IS A FORMAL PRE-<br>REQUISITE FOR CH 241 AND CH 269 BUT MAY BE WAIVED BY PASSING A<br>SPECIAL EXAMINATION. CH 198 SHOULD NORMALLY BE TAKEN AFTER MA 151<br>AND PY 113.<br>PREREQUISITE: CHEMISTRY 104<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                 |           |  | 3 CREDITS |
| CHEM 241 PHYSICAL AND ANALYTICAL CHEMISTRY I<br>THERMODYNAMICS AND THEORIES OF RATE PROCESSES AS APPLIED TO<br>EQUILIBRIA, ELECTROCHEMISTRY, AND SEPARATIONS TECHNIQUES.<br>PREREQUISITE: CHEMISTRY 104 AND 198, MATHEMATICS 151, PHYSICS 114<br>AND ONE PHYSICS LABORATORY.<br>3 LECT HRS, 3 LAB HRS<br>MR. ALPER                                                                                                                                                                                                                                                                                                    |           |  | 4 CREDITS |
| CHEM 242 PHYSICAL AND ANALYTICAL CHEMISTRY II<br>THERMODYNAMICS AND THEORIES OF RATE PROCESSES AS APPLIED TO<br>EQUILIBRIA, ELECTROCHEMISTRY, AND SEPARATIONS TECHNIQUES.<br>PREREQUISITE: CHEMISTRY 241.<br>3 LECT HRS, 3 LAB HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                           |           |  | 4 CREDITS |



|         |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
|---------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| CHEM    | 269 | CHEMICAL STRUCTURE I<br>INTRODUCTION TO FUNDAMENTAL THEORIES CONCERNING THE STRUCTURE OF<br>ATOMS AND MOLECULES. DISCUSSION OF THE APPLICATION OF SPECTROSCOPIC<br>METHODS IN STRUCTURE ELUCIDATION. LABORATORY WORK ILLUSTRATES LEC-<br>TURE PRINCIPLES AND PROVIDES PRACTICE IN APPLICATION OF VARIOUS<br>SPECTROSCOPIC TECHNIQUES.<br>PREREQUISITE: CHEMISTRY 104 AND 198, MATHEMATICS 151, PHYSICS 114<br>AND ONE PHYSICS LABORATORY.<br>3 LECT HRS, 3 LAB HRS<br>MR. WEINSTOCK                                                                                                                                                                               | 4 CREDITS |
| CHEM    | 270 | INORGANIC CHEMISTRY<br>DISCUSSION OF THE FUNDAMENTAL PRINCIPLES OF MODERN INORGANIC<br>CHEMISTRY. LABORATORY INCLUDES SYNTHETIC TECHNIQUES AND METHODS OF<br>CHARACTERIZATION OF INORGANIC COMPOUNDS.<br>PREREQUISITE: CHEMISTRY 269.<br>3 LECT HRS, 3 LAB HRS<br>MR. WEINRECHT                                                                                                                                                                                                                                                                                                                                                                                   | 4 CREDITS |
| CHEM    | 315 | TOPICS IN PHYSICAL CHEMISTRY<br>TOPICAL DISCUSSIONS, EACH BASED ON ELEMENTARY PRINCIPLES STUDIED<br>IN CHEMISTRY 213-14 AND PROGRESSING TOWARD RECENT DEVELOPMENTS<br>IN THE FIELD.<br>PREREQUISITE: CHEMISTRY 241 AND 269<br>3 LECT HRS<br>STAFF<br>NOT OFFERED 1976-77                                                                                                                                                                                                                                                                                                                                                                                          | 3 CREDITS |
| CHEM    | 351 | ORGANIC QUALITATIVE ANALYSIS<br>THEORY AND PRACTICE IN ORGANIC COMPOUND SEPARATION AND<br>IDENTIFICATION EMPLOYING CLASSICAL AND INSTRUMENTAL METHODS.<br>PREREQUISITE: CHEMISTRY 154 OR 156.<br>1 LECT HR, 6 LAB HRS<br>MR. CERNY                                                                                                                                                                                                                                                                                                                                                                                                                                | 3 CREDITS |
| CHEM    | 353 | INTRODUCTION TO POLYMER CHEMISTRY<br>AN INTRODUCTORY SURVEY OF POLYMER CHEMISTRY INCLUDING POLYMER<br>STRUCTURE AND STEREOCHEMISTRY. CHARACTERIZATION OF POLYMERS,<br>CATEGORIES OF POLYMERS, SYNTHESIS OF REACTANTS, AND POLYMERIZATION<br>REACTIONS AND THEIR MECHANISMS. WHY AND HOW POLYMERS ARE TAILOR-MADE<br>WILL BE EMPHASIZED. POLYMER CHEMISTRY AS AN INTERDISCIPLINARY AND AS<br>A UNIQUE AREA OF CHEMICAL SCIENCE WILL BE STRESSED.<br>PREREQUISITE: CHEMISTRY 154 OR 156 AND 241 OR EQUIVALENT<br>3 LECT HRS<br>MR. BECKER                                                                                                                           | 3 CREDITS |
| CHEM    | 354 | INTRODUCTION TO BIOCHEMISTRY<br>STRUCTURE, CHEMISTRY AND METABOLISM OF NUCLEIC ACIDS, PROTEINS<br>AND CARBOHYDRATES.<br>PREREQUISITE: CHEMISTRY 154 OR 156 OR EQUIVALENT.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3 CREDITS |
| CHEM    | 355 | TOPICS IN ORGANIC CHEMISTRY<br>SENIOR-LEVEL DISCUSSION OF SELECTED TOPICS IN ORGANIC CHEMISTRY.<br>PREREQUISITE: CHEMISTRY 154 OR 156<br>3 LECT HRS<br>STAFF<br>NOT OFFERED 1976-77                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 3 CREDITS |
| CHEM    | 361 | ANALYTICAL INSTRUMENTATION<br>PRINCIPLES AND USE OF INSTRUMENTAL METHODS IN ANALYSIS.<br>PREREQUISITE: CHEMISTRY 241 AND 269.<br>3 LECT HRS, 3 LAB HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4 CREDITS |
| CHEM    | 481 | ADVANCED LABORATORY IN CHEMISTRY I, II<br>SPECIAL LABORATORY TOPICS UNDER INDIVIDUAL GUIDANCE BY FACULTY<br>MEMBER.<br>PREREQUISITE: ALL CHEMISTRY MAJOR GRADUATION REQUIREMENTS.<br>12 LAB HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 4 CREDITS |
| CHEM    | 491 | SENIOR THESIS IN CHEMISTRY I, II<br>ORIGINAL INVESTIGATION BY THE STUDENT UNDER THE GUIDANCE OF A<br>FACULTY ADVISOR. AN ORAL RESUME BEFORE THE CHEMISTRY STAFF IS<br>REQUIRED.<br>PREREQUISITE: ALL CHEMISTRY MAJOR GRADUATION REQUIREMENTS.<br>12 LAB HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                              | 4 CREDITS |
| CHINESE |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
| CHIN    | 101 | ELEMENTARY CHINESE I<br>INTRODUCTION TO MODERN MANDARIN; INTENSIVE PRACTICE IN THE FOUR<br>LANGUAGE SKILLS WITH AN AUDIO-LINGUAL APPROACH, FOR STUDENTS WHO HAVE<br>NO CREDITABLE TRAINING IN CHINESE.<br>3 LECT HRS, 2 LAB HRS<br>MS. MAO                                                                                                                                                                                                                                                                                                                                                                                                                        | 4 CREDITS |
| CHIN    | 102 | ELEMENTARY CHINESE II<br>INTRODUCTION TO MODERN MANDARIN; INTENSIVE PRACTICE IN THE FOUR<br>LANGUAGE SKILLS WITH AN AUDIO-LINGUAL APPROACH, FOR STUDENTS WHO HAVE<br>NO CREDITABLE TRAINING IN CHINESE.<br>PREREQUISITE: CHINESE 101 OR EQUIVALENT<br>3 LECT HRS, 2 LAB HRS<br>MS. MAO                                                                                                                                                                                                                                                                                                                                                                            | 4 CREDITS |
| CHIN    | 201 | INTERMEDIATE CHINESE I<br>CONTINUATION OF CHINESE 102. INTENSIVE REVIEW AND FURTHER STUDY<br>OF GRAMMAR AND AUDIO-LINGUAL SKILLS WITH CORRELATED<br>INTERMEDIATE LEVEL READINGS IN MODERN CHINESE.<br>PREREQUISITE: CHINESE 102 OR EQUIVALENT.<br>3 LECT HRS, 2 LAB HRS<br>MS. MAO                                                                                                                                                                                                                                                                                                                                                                                | 4 CREDITS |
| CHIN    | 202 | INTERMEDIATE CHINESE II<br>CONTINUATION OF CHINESE 201. INTENSIVE REVIEW AND FURTHER STUDY<br>OF GRAMMAR AND AUDIO-LINGUAL SKILLS WITH<br>CORRELATED INTERMEDIATE-LEVEL READINGS IN MODERN<br>CHINESE. PREREQUISITE: CHINESE 102 OR EQUIVALENT.<br>PREREQUISITE: CHINESE 201<br>3 LECT HRS, 2 LAB HRS<br>MS. MAO                                                                                                                                                                                                                                                                                                                                                  | 4 CREDITS |
| CHIN    | 251 | MODERN CHINESE LITERATURE IN TRANSLATION<br>3 LECT HRS<br>MS. MAO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 4 CREDITS |
| CHIN    | 478 | INDEPENDENT STUDY<br>THIS COURSE IS OPEN TO STUDENTS WHO ARE ADEQUATELY EQUIPPED AND<br>WISH TO STUDY CHINESE ABOVE THE CHINESE 202 LEVEL (INTERMEDIATE).<br>READING MATERIAL IN CHINESE SUITED TO EACH STUDENT'S LEVEL WILL BE<br>ASSIGNED FOR STUDY AND AT LEAST ONE MEETING PER WEEK WITH THE INS-<br>TRUCTOR IS REQUIRED FOR THE STUDENT TO MAKE AN ORAL REPORT IN CHINESE<br>ON THE CONTENTS OF MATERIALS STUDIED AND TO BE HELPED IN AREAS WHERE<br>HE HAS ENCOUNTERED DIFFICULTIES. A 410-TERM AND A FINAL WILL BE<br>GIVEN TO TEST THE STUDENT'S ACCOMPLISHMENT.<br>PREREQUISITE: CHINESE 202 AND PERMISSION OF INSTRUCTOR<br>HRS BY ARRANGEMENT<br>STAFF | 3 CREDITS |



CLCSICS 284 GREEK AND ROMAN RELIGION AND MYTH  
GREEK AND ROMAN TRADITIONAL TALES -- THEIR ANALYSIS, BACKGROUNDS, AND  
LASTING INFLUENCE. SOME CONSIDERATION OF THE ANCIENTS' RELIEFS ABOUT  
DIVINITY, WORKSHOP AND RITUAL PRACTICES. BOTH PRIMARY (ANCIENT  
AUTHORS) AND SECONDARY (SCHOLARLY) SOURCES WILL BE USED. THIS COURSE  
IS SUGGESTED AS A FOLLOW-UP TO CLASSICS 281-282 AND AS PREPARATION  
FOR CLASSICS 285; ALSO FOR HISTORY AND LANGUAGE MAJORS. OFFERED EACH  
SEMESTER.  
3 LECT HRS  
STAFF  
4 CREDITS

CLCSICS 285 GREEK AND ROMAN TRAGEDY  
A SURVEY OF THE MONUMENTAL, DRAMATIC PRODUCTION OF FIFTH CENTURY  
ATHENS INCLUDING THE WORKS OF AESCHYLUS, SOPHOCLES, AND EURIPIDES.  
BACKGROUND ON PERIOD, TRAGIC GENRE AND THEATRE CONVENTIONS,  
INFLUENCE ON ROME. OFFERED EACH SEMESTER.  
3 LECT HRS  
4 CREDITS

CLCSICS 286 GREEK & ROMAN COMEDY  
THE ORIGINS OF WESTERN COMEDY THROUGH A READING OF SELECTED  
WORKS (ARISTOPHANES AND MENANDER (GREECE; PLAUTUS AND TERENCE  
ROME). OFFERED EACH SEMESTER.  
3 LECT HRS.  
STAFF  
4 CREDITS

CLCSICS 287 WOMEN IN GREEK AND ROMAN LITERATURE, REFLECTIONS OF A DIVIDED SOCIETY  
READINGS IN ENGLISH TRANSLATIONS OF WORKS OF GREEK AND ROMAN LITERA-  
TURE DEALING WITH WOMEN AND THEIR PLACE IN SOCIETY.  
OFFERED AT TWO YEAR INTERVALS. SPRING 1977  
PREREQUISITE: SOPHOMORE STANDING  
3 LECT HRS  
STAFF  
4 CREDITS

CLCSICS 288 LITERARY CRITICISM IN ANTIQUITY  
READINGS IN ENGLISH TRANSLATION OF WORKS OF GREEK AND ROMAN LITERA-  
TURE DEALING WITH CRITICISM.

OFFERED AT TWO YEAR INTERVALS. FALL 1977  
PREREQUISITE: SOPHOMORE STANDING  
3 LECT HRS  
STAFF  
4 CREDITS

CLCSICS 290 AESTHETICS IN CLASSICAL LITERATURE  
A STUDY OF THE ANCIENT THEORIES OF LITERARY ART APPRECIATION.  
3 LECT HRS  
STAFF  
4 CREDITS

CLCSICS 291 GREEK AND ROMAN HISTORIOGRAPHY  
MAJOR GREEK/ROMAN HISTORIANS STUDIED; CONSIDERS DEVELOPMENT OF  
HISTORICAL WRITING, HISTORIANS' CONCEPTS OF CAUSATION, LITERARY  
TECHNIQUES; PRIMARY AND SECONDARY SOURCES. OFFERED AT TWO YEAR  
INTERVALS. SPRING, 1979.  
3 LECT HRS  
STAFF  
4 CREDITS

CLCSICS 292 RHETORIC: THE ART OF PERSUASION  
EXAMINES GREAT SPEECHES FROM ANTIQUITY TO THE PRESENT BY USING THE  
MODELS, TECHNIQUES, AND STANDARDS OF PUBLIC SPEAKING AS  
DEVELOPED IN ANCIENT ATHENS AND ROME. OFFERED AT TWO YEAR  
INTERVALS. FALL 1976.  
3 LECT HRS  
STAFF  
4 CREDITS

CLCSICS 478 INDEPENDENT STUDY  
479 SELECTED RESEARCH TOPICS ORGANIZED IN CONSULTATION WITH INDIVIDUAL  
STUDENTS  
PREREQUISITE: PERMISSION OF INSTRUCTOR AND DEPARTMENT CHAIRMEN  
HRS BY ARRANGEMENT  
STAFF  
3 CREDITS

## CLASSICS

### Degree Requirements

#### GREEK MAJOR:

- 1) Greek 222 and at least four (4) three-credit courses in Greek at the 300+ level, including Gr 310 Epic Poetry.
- 2) either Cl 281-282 or History 208-209 or any other two Classics courses with departmental approval.
- 3) either two semesters of college Latin at the appropriate level or two additional Greek courses at 300+ level.

#### LATIN MAJORS:

- 1) Latin 222 and at least four (4) three-credit courses in Latin at the 300+ level, including Latin 310 Virgil.
- 2) either Cl 281-282 or History 208-209 or any other two Classics courses with departmental approval.
- 3) either two semesters of college Greek at the appropriate level or two additional Latin courses at the 300+ level.

#### GREEK-LATIN:

- 1) Greek 222 and Latin 222
- 2) At least five (5) three-credit Greek or Latin courses at the 300+ level: three in one language, two in the other.
- 3) either Classics 281-282 or History 208-209 or any other two Classics courses with departmental approval.

#### CLASSICAL STUDIES MAJOR:

For information about this new major, please consult the Department of Classics.  
One year of college study of Latin or Greek and a series of Classics courses (in-translation) are required.

#### CLCSICS 161 THE ENGLISH LEXICON

THE DEBT OUR LANGUAGE OWES TO LATIN AND GREEK. AN  
INTRODUCTORY CONSIDERATION OF ENGLISH VOCABULARY, WORD  
FORMATION, AND WORD ORIGINS. SUGGESTED AS AN AID TO BASIC  
SKILLS DEVELOPMENT AND TO GENERAL, LINGUISTIC (LANGUAGE)  
AWARENESS. OFFERED IN FALL.  
3 LECT HR.  
STAFF  
4 CREDITS

#### CLCSICS 281 GREEK AND ROMAN CIVILIZATION I II

282 A CONSIDERATION OF THE MAJOR PERIODS OF ANCIENT CIVILIZATION  
THROUGH THE READING OF LITERARY MASTERPIECES SUPPLEMENTED BY LECTURES  
ON CULTURAL AND HISTORICAL BACKGROUNDS: INCLUDING HOMER, THE  
TRAGEDIANS (AESCHYLUS, SOPHOCLES, EURIPIDES) ARISTOPHANES, PLATO  
(GREECE) CICERO, CATULLUS, VERGIL, OVID, PETRONIUS (ROME). SOME  
INTRODUCTION TO ARCHEOLOGICAL AND ARTISTIC MATERIALS. THIS COURSE  
INITIATES THE SUGGESTED SEQUENCE OF CLASSICS \*IN TRANSLATION\*  
COURSES FOR MAJORS AND OTHERS (ESPECIALLY THOSE WITHOUT PREPARATION  
IN THIS AREA). THE SEMESTERS MAY BE TAKEN IN REVERSE ORDER: 281  
ONLY IN FALL. 282 ONLY IN SPRING  
3 LECT HRS  
STAFF  
4 CREDITS

#### CLCSICS 283 GREEK & ROMAN EPIC POETRY

THE GENRE OF EPIC POETRY, ITS USES, AND INFLUENCE IN WESTERN  
LITERATURE. READING OF THE ILLIAD AND ODYSSEY OF HOMER  
(GREECE), THE AENEID OF VERGIL (ROME), CAREFUL AND COMPLETE  
STUDY. OFFERED IN SPRING.  
3 LECT HRS.  
STAFF  
4 CREDITS

CLSCS 490 HONORS PROGRAM I II

491 FALL SEMESTER--EXTENSIVE READING IN ONE HROAD SEGMENT OF CLASSICAL LITERATURE CULMINATING IN A ONE-HOUR WRITTEN EXAMINATION. SENIOR PREREQUISITE: 3-2 MAJOR AVERAGE, 3.0 OVERALL AVERAGE, SENIOR STANDING WEEKLY CONFERENCES  
1 CREDITS  
STAFF

CLSCS 499 HONORS THESIS

499 A SUBSTANTIVE REVIEW OF A SUBJECT APPROVED BY THE INDIVIDUAL INSTRUCTOR.  
PREREQUISITE: PERMISSION OF DEPARTMENT AND SOPHOMORE STANDING  
HRS BY ARRANGEMENT  
STAFF  
3 CREDITS

CLSCS 596 CURRICULUM AND METHODS STUDENTS TEACHING - CLASSICS THE ISSUES, PRINCIPLES AND METHODS OF SECONDARY SCHOOL TEACHING OF LATIN, SUPERVISION AND CRITIQUE OF PRACTICE TEACHING.  
PREREQUISITE: 6 HOURS EDUCATION COURSES AND ADMISSION TO THE TEACHER CERTIFICATION PROGRAM  
3 LECT HRS. 20 LAB HRS (PRACTICE TEACHING)  
STAFF  
9 CREDITS

ECONOMICS

ECONOMICS COLLEGE I

Graduation Requirements

All Economics majors are required to take Economics 100, 155 and 200-202 and 18 additional credits of junior-senior level courses. However, by permission of the department up to 6 credits in related disciplines may be substituted for Economics courses. It should be noted that Economics 131 is not considered to be a junior-senior level course.

POLITICAL ECONOMY COLLEGE II

Graduation Requirements

All majors are required to take Ec 100, 155, 205, 208, 209 and 15 additional credits of junior-senior level courses. (200 numbered sequence or above) However, by permission of the department up to 6 credits in related disciplines may be substituted for department courses. It should be noted that Ec 131 and Ec 180 are not considered to be junior-senior level courses.

Majors planning to go on to graduate study are advised to take Ec 351 and Ec 352.

ECON 100 ECONOMIC LITERACY

A BROAD INTRODUCTORY SURVEY OF ECONOMIC PRINCIPLES AND INSTITUTIONS. EMPHASIS ON THE ROLE OF ECONOMIC PRINCIPLES IN UNDERSTANDING AND ANALYZING CURRENT ECONOMIC PROBLEMS.  
3 LECT HRS  
STAFF  
4 CREDITS

ECON 155 STATISTICAL METHODS

A NON-CALCULUS INTRODUCTION TO STATISTICAL INFERENCE. PRIMARY OBJECTIVE IS TO FAMILIARIZE THE STUDENTS WITH COMMON STATISTICAL CONCEPTS SO THEY WILL BE ABLE TO MAKE INTELLIGENT EVALUATIONS TO TECHNICAL REPORTS. THE FIRST HALF OF THE COURSE COVERS PROBABILITY INCLUDING COMMON DISTRIBUTIONS. SECOND HALF STUDIES HYPOTHESIS TESTING INCLUDING T-TESTS, GOODNESS OF FIT, CONTINGENCY TABLES, ANALYSIS OF VARIANCE, REGRESSIONS, AND CORRELATION.  
3 LECT HRS  
STAFF  
4 CREDITS

ECON

180 THE POLITICAL ECONOMY OF TAXATION IN MASSACHUSETTS INTRODUCES THE NON-ECONOMICS MAJOR TO THE POLITICAL ECONOMY OF TAXATION WITH SPECIAL EMPHASIS ON THE ISSUES OF STATE AND LOCAL TAXATION IN MASSACHUSETTS. THE MECHANISMS OF THE PROPERTY TAX, STATE TAX AND STATE AID FORMULA, FISCAL ZONING, HOUSING AND SCHOOL FINANCING ISSUES, PROPOSALS FOR REFORMS IN THE SYSTEM OF STATE AND LOCAL TAXES IN MASSACHUSETTS.  
PREREQUISITE: FOR NON-ECONOMICS MAJORS ONLY  
3 LECT HRS  
MR. TORTO  
3 CREDITS

ECON

200 ECONOMIC THEORY I. MACROECONOMICS ANALYSIS OF THE FORCES DETERMINING THE LEVEL AND STRUCTURE OF GROSS NATIONAL OUTPUT, AND THOSE GOVERNMENT POLICIES WHICH ATTEMPT TO AFFECT ECONOMIC ACTIVITIES IN THE UNITED STATES.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
STAFF  
3 CREDITS

ECON

201 ECONOMIC THEORY II. MICROECONOMICS ANALYSIS OF CONSUMER BEHAVIOR. THE THEORY OF PRODUCTION EQUILIBRIUM OF THE FIRM AND THE INDUSTRY. MARKET STRUCTURES AND THE PRICING OF FACTORS OF PRODUCTION.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
STAFF  
3 CREDITS

ECON

205 ECONOMIC INSTITUTIONS AND ORGANIZATIONS AN INTRODUCTION TO THE INSTITUTIONAL CONTEXT OF ECONOMIC ACTIVITY IN THE CONTEMPORARY AMERICAN SOCIETY. ROLE OF THE STATE IN THE ECONOMY. CHARACTER OF THE MODERN CORPORATION AND THE LABOR UNION AND THEIR RELATIONSHIP TO ONE ANOTHER. THE ROLE OF SCHOOLS AND THE FAMILY IN THE ECONOMY.  
3 LECT HRS  
MR. ESPOSITO  
3 CREDITS

ECON

204 CONSUMER ECONOMICS THIS COURSE WILL INVOLVE THREE AREAS OF CONCENTRATION: CONSUMER BEHAVIOR, INCLUDING DECISION MAKING AND THE EFFECT OF ADVERTISING; CONTEMPORARY ISSUES INCLUDING MONEY MANAGEMENT, CONSUMER CREDIT, HEALTH CARE, HOUSING AND TRANSPORTATION; AND THE EFFECT OF GOVERNMENTAL ACTIONS ON CONSUMPTION AND PROTECTION OF CONSUMERS IN THE MARKET PLACE.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
MS. KOSBERG  
3 CREDITS

ECON

208 HISTORY OF ECONOMIC THOUGHT I AN INTRODUCTION TO THE SCHOOLS OF ECONOMIC ANALYSIS WHICH HAVE SHAPED SOCIETY'S THINKING ABOUT THE ECONOMY. SCHOOLS OF THOUGHT AND THEIR ASSOCIATED TECHNIQUES OF ANALYSIS ARE EXAMINED AND CRITICIZED IN LIGHT OF THE SOCIO-HISTORICAL CONTEXTS IN WHICH THEY WERE PUT FORWARD.  
IN THE FIRST SEMESTER OF THIS COURSE THE MERCANTILISTS, PHYSIOCRATS, AND THE CLASSICAL POLITICAL ECONOMISTS (THROUGH MARX) ARE STUDIED.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
MR SHUTE  
3 CREDITS

ECON

209 HISTORY OF ECONOMIC THOUGHT II THIS IS THE SECOND SEMESTER SEQUENCE TO EC. 208 AND COVERS THE RISE OF THE NEO-CLASSICAL SCHOOL AND KEYNESIAN ANALYSIS. ALONG WITH THE ANALYSIS OF THE TWENTIETH CENTURY INSTITUTIONALISTS AND NEO-MARKET CRITICISM. THROUGHOUT THE COURSE THE STUDENT IS INTRODUCED TO THE CONCEPTS AND TECHNIQUES OF MODERN ECONOMIC ANALYSIS AND POLITICAL ECONOMY.  
PREREQUISITE: ECONOMICS 208  
3 LECT HRS  
MR SHUTE  
3 CREDITS



- ECON 213 URBAN ECONOMICS  
AN ECONOMIC ANALYSIS OF URBAN AREAS AND URBAN PROBLEMS. PROVIDES AN ECONOMIC EXPLANATION OF THE GROWTH OF CITIES AND METROPOLITAN AREAS TOGETHER WITH AN UNDERSTANDING OF THE FORCES THAT DETERMINE THE LOCATION, FORM, AND ECONOMIC STRUCTURE OF CITIES. A NUMBER OF CONTEMPORARY PROBLEMS ARE STUDIED IN DEPTH. A POLITICAL-ECONOMIC ANALYSIS IS APPLIED TO SUCH PROBLEMS AS THE PROPERTY TAX, HOUSING AND URBAN RENEWAL, POVERTY, CRIME AND TRANSPORTATION.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
MS. STEVENSON, MR. TORTO  
3 CREDITS
- ECON 214 URBAN RESEARCH  
THIS COURSE PROVIDES THE STUDENT THE OPPORTUNITY TO UNDERTAKE IN DEPTH A RESEARCH EFFORT ON A PARTICULAR URBAN PROBLEM. STUDENTS WORK WITH PRIMARY AS WELL AS SECONDARY DATA SOURCES. WHERE POSSIBLE, THE CLASS WORKS TOGETHER ON A SINGLE RESEARCH ISSUE AND PRODUCES A JOINTLY AUTHORED RESEARCH REPORT BY THE END OF THE COURSE.  
PREREQUISITE: ECONOMICS 213  
3 LECT HRS  
MR. TORTO  
3 CREDITS
- ECON 235 INTERNATIONAL ECONOMICS  
THE THEORY OF INTERNATIONAL TRADE; THEORY AND PRACTICE OF COMMERCIAL POLICY. INTERNATIONAL FINANCE; THE BALANCE OF PAYMENTS, ADJUSTMENT MECHANISMS, AND ALTERNATIVE MONETARY SYSTEMS.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
MS. GARRITY, MR. SCHIAVO-CAMPO  
3 CREDITS
- ECON 236 ECONOMIC DEVELOPMENT  
THE ECONOMIC MEANING OF UNDERDEVELOPMENT. EVALUATION OF ALTERNATIVE 'STRATEGIES' FOR ECONOMIC GROWTH. THE ROLE PLAYED BY DIFFERENT KINDS OF RESOURCES. INTERACTION OF THE PROBLEMS OF THE UNDERDEVELOPED COUNTRIES OF AFRICA, ASIA, AND LATIN AMERICA WITH THE POLICIES OF THE DEVELOPED COUNTRIES.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
MS. GARRITY, MR. SCHIAVO-CAMPO  
3 CREDITS
- ECON 237 THE AFRICAN ECONOMY  
COMPARATIVE ANALYSIS OF THE ECONOMIC CHARACTERISTIC PROBLEMS OF SUB-SAHARA AFRICA.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
MS. GARRITY  
3 CREDITS
- ECON 239 THE LATIN AMERICAN ECONOMY  
DESCRIPTION AND ANALYSIS OF THE ECONOMIC CHARACTERISTICS AND PROBLEMS OF LATIN AMERICAN COUNTRIES.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
STAFF  
3 CREDITS
- ECON 243 THE POLITICAL ECONOMY OF THE BLACK GHETTO  
A SURVEY OF THE ECONOMIC STATUS OF BLACK AMERICANS. EXAMINATION OF THE SOCIAL AND ECONOMIC LEGACY OF SLAVERY AND RECONSTRUCTION. ANALYSIS OF PARTICULAR PROBLEM AREAS FOR CONTEMPORARY BLACKS, E.G. HOUSING, LABOR MARKET DISCRIMINATION AND EDUCATION. EVALUATION OF COMMUNITY ECONOMIC DEVELOPMENT, BLACK CAPITALISM AND OTHER STRATEGIES FOR BLACK ECONOMIC DEVELOPMENT.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
MR. BETSEY  
3 CREDITS
- ECON 249 THE POLITICAL ECONOMY OF ENVIRONMENTAL CONTROL  
AN INTRODUCTORY SURVEY OF THE IMPACT OF ECONOMIC ACTIVITY UPON THE ENVIRONMENT AND THE QUALITY OF LIFE IN OUR SOCIETY. THE SOURCES, MEASUREMENT, AND CONTROL OF POLLUTION AS A PROBLEM IN PRIVATE AND SOCIAL PLANNING. LEGAL, SOCIAL, POLITICAL, AND PSYCHOLOGICAL FACTORS.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
MR. WOLOZIN  
3 CREDITS
- ECON 272 COMPARATIVE ECONOMIC SYSTEMS  
RELATIONSHIP BETWEEN MARKET AND NON-MARKET MECHANISMS IN THE PRODUCTION AND DISTRIBUTION OF ECONOMIC RESOURCES IN FOUR ECONOMIES. FIRST HALF DEVOTED TO ANALYSIS OF CONTEMPORARY AMERICAN CAPITALISM, THE BRITISH ECONOMY UNDER LABOR GOVERNMENT 1945-1950, AND THE GERMAN ECONOMY OF 1934-1945. SECOND HALF CONCENTRATES ON PLANNED ECONOMY OF THE U.S.S.R.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
MR. KIRSCH  
3 CREDITS
- ECON 275 ECONOMIC INTEREST GROUPS AND THE AMERICAN POLITICAL PROCESS  
BOTH GENERALIZED AND SELECTED SPECIFIC OBJECTIVES OF MAJOR ECONOMIC INTEREST GROUPS WILL BE STUDIED. MODIFICATION OF THESE OBJECTIVES BY THE INTERACTION OF EXECUTIVE AND LEGISLATIVE BRANCHES OF GOVERNMENT WILL BE TRACED AND ANALYZED.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
STAFF  
3 CREDITS
- ECON 280 THE ECONOMICS OF HEALTH CARE  
THIS COURSE IS PRIMARILY CONCERNED WITH ANALYZING THE HEALTH CARE DELIVERY SYSTEM IN THE UNITED STATES. AMONG THE TOPICS COVERED WILL BE THE ECONOMIC, SOCIAL, AND DEMOGRAPHIC FACTORS DETERMINING THE DEMAND FOR HEALTH CARE, THE SUPPLY OF VARIOUS KINDS OF HEALTH MANPOWER, THE FINANCING OF HEALTH CARE SERVICES AND ITS IMPACT ON HOSPITALS, AND ALTERNATIVE SYSTEMS OF HEALTH CARE DELIVERY.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
MR. ESPOSITO  
3 CREDITS
- ECON 281 MARXIST ANALYSIS AND RADICAL CRITIQUE OF MODERN ECONOMIC THEORY  
THE CENTRAL FOCUS OF THE COURSE IS MARXIST ECONOMIC ANALYSIS IN ITS CLASSICAL AND MODERNIZED FORMS. RADICAL CRITIQUES OF STANDARD MACRO, MICRO, AND DEVELOPMENT ECONOMIC THEORY ARE PRESENTED AND EVALUATED.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
MR. KIRSCH  
3 CREDITS
- ECON 291 ECONOMICS OF LABOR AND COLLECTIVE BARGAINING  
A BRIEF HISTORICAL OVERVIEW OF THE AMERICAN LABOR MOVEMENT AND INSTITUTIONS. TRADITIONAL ECONOMIC THEORIES OF WAGE DETERMINATION AND THE IMPACT OF COLLECTIVE BARGAINING. A RADICAL CRITIQUE AND ALTERNATIVE THEORIES AS APPLIED TO LOW-WAGE LABOR MARKETS.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
MR. RETSEY  
3 CREDITS
- ECON 292 WOMEN'S WORK  
THE COURSE WILL EXAMINE THE QUESTION OF DISCRIMINATION IN THE LABOR FORCE FROM A PERSPECTIVE WHICH EMPHASIZES WOMEN'S DUAL WORK ROLE, INSIDE AND OUTSIDE THE HOME. THE PROCESS OF INDUSTRIALIZATION, WHICH LED TO AN INCREASING PROPORTION OF TOTAL PRODUCTION TAKING PLACE OUTSIDE THE HOME WILL BE STUDIED IN ORDER TO ASSESS ITS IMPACT ON WOMEN, AND IN ORDER TO PROVIDE A BACKGROUND TO A STUDY OF SEX SEGREGATION AND WAGE DISCRIMINATION IN THE CURRENT LABOR FORCE. THEORETICAL QUESTIONS ON THE RELATIONSHIP BETWEEN WOMEN'S OPPRESSION AND THE NATURE OF THE ECONOMIC SYSTEM AS A WHOLE WILL BE DISCUSSED THROUGHOUT.  
PREREQUISITE: ECONOMICS 100 OR PERMISSION OF INSTRUCTOR.  
3 LECT HRS  
STAFF  
3 CREDITS
- ECON 294 SEX SEGREGATED LABOR MARKETS  
A STUDY OF WOMEN'S INFERIOR ECONOMIC STATUS, PROPOSALS FOR CHANGES IN PUBLIC POLICY, AND A REVIEW OF THEORETIC AND EMPIRICAL WORK ON TOPICS INCLUDING WOMEN'S LABOR FORCE PARTICIPATION, JOB SEGREGATION, WAGE DIFFERENCES AND DISCRIMINATION.  
PREREQUISITE: ECONOMICS 100 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. STEVENSON  
3 CREDITS



- ECON 317 THE ECONOMICS OF THE PUBLIC SECTOR. PROBLEMS IN PUBLIC FINANCE THE INCIDENCE AND EFFECTS OF TAXATION, GOVERNMENT EXPENDITURE PROGRAMS, AND PUBLIC DEBT OPERATIONS OF FEDERAL, STATE AND LOCAL GOVERNMENTS.  
PREREQUISITE: ECONOMICS 200  
3 LECT HRS  
MR. PODOFF  
3 CREDITS
- ECON 318 THE ECONOMICS OF STATE AND LOCAL GOVERNMENTS IN DEVELOPING A SYSTEMATIC FRAMEWORK FOR ANALYZING ECONOMIC PROBLEMS OF STATE AND LOCAL GOVERNMENTS, THIS COURSE WILL COVER SUCH TOPICS AS THE FINANCING OF EDUCATION, REVENUE-SHARING AND PROGRAM BUDGETING.  
PREREQUISITE: ECONOMICS 201  
3 LECT HRS  
MR. PODOFF  
3 CREDITS
- ECON 330 THE POLITICAL ECONOMY OF MONEY  
AN ECONOMIC ANALYSIS OF FINANCIAL INSTITUTIONS AND MARKETS IN THE AMERICAN ECONOMY. INSTITUTIONAL AND ECONOMIC FACTORS IN THE DETERMINATION OF THE MONEY SUPPLY ARE STUDIED, INCLUDING THE COMMERCIAL BANKING SYSTEM, THE FEDERAL RESERVE SYSTEM, AND THE MONEY AND CAPITAL MARKETS. CONCENTRATION ON THE THEORY AND EVIDENCE CONCERNING THE DEMAND AND SUPPLY OF MONEY AND ITS EFFECTS ON THE AMERICAN ECONOMY. THE DEBATE BETWEEN THE MONETARISTS AND THE FISCALISTS, AND CURRENT MONETARY ISSUES.  
PREREQUISITE: ECONOMICS 200 AND 209  
3 LECT HRS  
MR. TORTO  
3 CREDITS
- ECON 332 INDUSTRIAL ORGANIZATION  
A THEORETICAL FRAMEWORK FOR THE ANALYSIS AND EVALUATION OF THE PERFORMANCE OF AMERICAN INDUSTRY. EXAMINATION OF A GROUP OF AMERICAN INDUSTRIES TO ILLUSTRATE USEFULNESS OF ECONOMIC THEORY IN EXPLAINING PRICE AND OUTPUT POLICY. ANALYSIS OF ANTITRUST ACTIVITIES AS A PUBLIC POLICY DESIGNED TO PROMOTE BETTER MARKET PERFORMANCE.  
PREREQUISITE: ECONOMICS 210  
3 LECT HRS  
MR. ESPOSITO  
3 CREDITS
- ECON 345 INCOME DISTRIBUTION  
THIS COURSE DEALS WITH RECENT TRENDS IN AND THE CURRENT STATE OF INCOME INEQUALITY IN THE U.S. & CONCEPTUAL AND MEASUREMENT PROBLEMS. THE ROLE AND IMPACT OF GOVERNMENT ON THE DISTRIBUTION OF INCOME IS ANALYZED IN DETAIL.  
PREREQUISITE: ECONOMICS 100  
3 LECT HRS  
MR. PODOFF  
3 CREDITS
- ECON 351 MATHEMATICAL ECONOMICS  
STATIC AND DYNAMIC MODELS OF ECONOMIC BEHAVIOR WILL BE FORMULATED.  
PREREQUISITE: MATHEMATICS 125 OR EQUIVALENT, ECONOMICS 200-212 PER-MISSION OF INSTRUCTOR.  
3 LECT HRS  
MR. PRIMONT  
3 CREDITS
- ECON 352 ECONOMETRICS  
THE TRADITIONAL SIMPLE AND MULTIPLE LINEAR REGRESSION MODELS. APPLICATION OF THESE MODELS TO ESTIMATING BOTH MICROECONOMIC AND MACROECONOMIC RELATIONSHIPS.  
PREREQUISITE: ECONOMICS 155  
3 LECT HRS  
MR. PRIMONT  
3 CREDITS
- ECON 405 PRIVATE MARKETS AND POLITICAL POWER  
AN HISTORICAL AND ANALYTICAL EXAMINATION OF THE ECONOMIC ROLE OF GOVERNMENT IN CAPITALIST SOCIETIES.  
3 LECT HRS  
STAFF  
3 CREDITS
- ECON 435 THE MULTI-NATIONAL CORPORATIONS  
IMPACT OF THE MULTINATIONAL CORPORATION ON THE ECONOMIC AND SOCIAL STRUCTURES OF THE LESS DEVELOPED COUNTRIES. TOPICS WILL INCLUDE

- THEORIES OF DIRECT INVESTMENT, NATURE OF HOST COUNTRY-FOREIGN CONFLICTS, ISSUES IN LABOR RELATIONS, IMPACT ON ECONOMIC INTERGRATION AND POLICY ALTERNATIVES OF THE LESS DEVELOPED COUNTRIES. RESEARCH PROJECT AND REPORT REQUIRED.  
PREREQUISITE: ECONOMICS 235, 236 AND 237  
3 LECT HRS  
MS GARRITY  
3 CREDITS
- ECON 450 ECONOMIC MAN AND THE IMAGE OF MAN  
A SEMINAR OF THE ECONOMIC IMAGE OF MAN IN COMPARISON WITH THE IMAGE OF MAN AS SEEN IN OTHER DISCIPLINES. READINGS IN MODERN PHILOSOPHY, POLITICAL THEORY, SOCIOLOGY, PSYCHOLOGY, AND ECONOMICS.  
PREREQUISITE: ECONOMICS 100 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. WOLOZIN  
3 CREDITS
- ECON 470 SPECIAL TOPICS  
3 LECT HRS  
STAFF  
3 CREDITS
- ECON 476 FIELD WORK IN ECONOMICS I II  
477 CAREFULLY SUPERVISED FIELD WORK IN INSTITUTIONS IN THE BOSTON AREAS WHICH DO RESEARCH ON ECONOMIC ISSUES. A WRITTEN DESCRIPTION OF THE RESEARCH, PERIODIC CONFERENCES WITH THE FACULTY SUPERVISOR, AND A FINAL REPORT ON THE FIELD WORK EXPERIENCE ARE REQUIRED MONTHLY. OPEN TO A LIMITED NUMBER OF STUDENTS PER SEMESTER. THE DEPARTMENT WILL PLACE THE STUDENT IN THE APPROPRIATE INSTITUTION.  
PREREQUISITE: PERMISSION OF THE DEPARTMENT  
3 LECT HRS  
MR. TORTO  
3 CREDITS
- ECON 478 INDEPENDENT STUDIES I II  
479 RESEARCH AND READING IN ANY AREA IN ECONOMICS; THE PURPOSE OF THIS COURSE IS TO ALLOW THE STUDENT TO DO ADVANCED WORK IN AN AREA OF ECONOMICS TO WHICH HE HAS ALREADY BEEN EXPOSED OR TO INVESTIGATE AN ENTIRELY NEW AREA.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
HRS BY ARRANGEMENT  
STAFF  
3 CREDITS
- ECON 480 SEMINAR  
A SENIOR SEMINAR CONDUCTED BY VARIOUS MEMBERS OF THE FACULTY WITH CONCENTRATION ON THEIR FIELDS OF SCHOLARLY INTEREST.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
STAFF  
3 CREDITS
- ECON 481 SEMINAR ON ENVIRONMENTAL CONTROL  
RESEARCH AND READING IN SELECTED TOPICS RELATED TO ENVIRONMENTAL CONTROL: SOCIAL COSTS, QUALITY OF THE ENVIRONMENT, ECONOMICS AND THE LAW, POPULATION, ECONOMIC GROWTH, INTERDISCIPLINARY APPROACHES, ETC.  
PREREQUISITE: ECONOMICS 249 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. WOLOZIN  
3 CREDITS
- ECON 482 SEMINAR ON MONETARY AND FISCAL POLICY  
ANALYSIS AND EVALUATION OF THE TOOLS OF MONETARY AND FISCAL POLICY AND THEIR EFFECTIVENESS IN STABILIZING ECONOMIC ACTIVITY.  
PREREQUISITE: ECONOMICS 200  
3 LECT HRS  
MR. PODOFF  
3 CREDITS
- ECON 490 HONORS THESIS  
SENIOR ECONOMICS MAJORS WHO HAVE AT LEAST A 3.0 GRADE POINT AVERAGE BOTH OVERALL AND IN THEIR MAJOR CAN, WITH THE APPROVAL OF THE DEPARTMENT IN THE SPRING SEMESTER OF THEIR SENIOR YEAR, WRITE AN HONORS THESIS UNDER THE DIRECT SUPERVISION OF A MEMBER OF THE DEPARTMENT. THE THESIS ADVISOR WILL BE CHOSEN BY THE STUDENT AND THE NATURE OF THE RESEARCH PROJECT WILL BE AGREED UPON BY BOTH

STUDENT AND ADVISOR. THE THESIS ADVISOR AND THE STUDENT WILL THEN SELECT A READER WHO WILL BE AVAILABLE FOR CONSULTATION THROUGH THE TERM OF THE PROJECT. UPON COMPLETION OF THE THESIS, IT WILL BE SUBMITTED TO THE DEPARTMENT CHAIRPERSON WHO WILL SCHEDULE AN ORAL RESUME BEFORE THE ECONOMICS DEPARTMENT. THE GRADE FOR THE COURSE AND THE AWARDING OF HONORS WILL BE DETERMINED BY THE THESIS ADVISOR AND READER.

HRS BY ARRANGEMENT 3 CREDITS  
STAFF

ENGL 300 FIELD PRACTICUM IN ECONOMICS  
THE PRACTICUM IS DESIGNED TO ENABLE A STUDENT TO EARN 15 HOURS CREDIT -SIX IN HIS MAJOR FIELD- FOR A SEMESTER OF WORK DURING THE ACADEMIC YEAR WITH A GOVERNMENT AGENCY. THE PROGRAM IS DESIGNED TO INTEGRATE THIS EXPERIENCE INTO A MORE GENERAL EDUCATION PLAN WHICH WILL REQUIRE MAJORS TO COMPLETE A TYPE COURSE THAT IS SUBSTANTIALLY RELATED TO THE PROPOSED INTERNSHIP IN THE SEMESTER PRECEDING AND A SIMILARLY RELATED POST- COURSE IN THE SEMESTER FOLLOWING THE INTERNSHIP. SEE DEPT. FOR A SPECIFIC SAMPLE PROGRAM.  
PREREQUISITE: APPROVAL OF ECONOMICS DEPARTMENT  
MR. TOPTO

#### ENGLISH COLLEGE I

##### Graduation Requirements

The English department offers a wide variety of courses for majors and non-majors, of various levels of preparation, in imaginative literature, creative and practical writing, and language. Students majoring in English are invited to plan coherent individual programs of courses that best satisfy their own interest and needs. During pre-registration the English department of College I will make available to its majors several kinds of advising. Students may use the services of individual faculty advisors of the special pre-registration advising pool, and/or the director of the undergraduate major. Some students enjoy and profit from a continuing advising relationship with an individual member of the English faculty. They like the opportunity to plan, evaluate, and revise their academic programs with someone who knows them and their careers at URB well. If you would like such an advisor and do not now have one, consider approaching during this period some member of the faculty whom you know and like and whose advice you would value. Or, if you wish, ask the Director of the Undergraduate Program to assign you a faculty advisor. Office hours of faculty advisors will be prominently posted in the department on the sixth floor of College I.

Some students may wish simply to get some specific assistance with pre-registration. They may want to use the services of the advising pool: A group of faculty who will be available at regular, prime-time, mid-day hours. Exact hours during the pre-registration period will be posted in the department. Finally, students who have special problems (with the core requirement, for example) or special interests (in honors or independent study, for example) may need to see the Director of the Undergraduate major. Transfer students should see him sometime early in their careers at URB in order to have their major credits from other institutions reviewed. All students are reminded that instructors' full course descriptions, with reading lists and details concerning approach, papers and exams, will be posted in the department. Majors or prospective majors should also request a copy of the annually revised registration handbook for English majors. Majors without a departmental advisor should consult the Director of the Undergraduate major through the department office.

In planning a coherent program, the major shall begin with courses from the "Nature of literature" group, to become familiar with the wide choice of forms, themes, and cultural settings of literature in English, and to receive intensive practice in interpretive reading and writing. Thereafter, the major will be better able to select courses in keeping with the emphasis or pattern most congenial to his/her preferences and aims. Possible patterns include the following:

- 1) Courses collectively offering a survey of the historical continuities and variations of American and/or British literature;
- 2) Courses offering study of a major literary form-narrative; fiction, drama, poetry;

- 3) Courses which (together with cognate courses in other departments) study the literature and thought of a major cultural epoch - the Modern World, for example, or the Medieval and Renaissance worlds, or the World of the Enlightenment;
- 4) Courses in writing and language, with relevant courses in literature;
- 5) Courses which may be used together for the tracing of a major humane theme or problem through various stages of cultural history.

Most students currently agree that the best programs stress broad exposure in the early and intermediate stages, and save more specialized study for the end. All English majors are advised to study foreign languages. Those interested in attending graduate school should plan to achieve a reading knowledge of at least one foreign language before graduation.

The minimum major requirement at present is ten English courses beyond freshman English. Of these, at least six must be above the sophomore level (200-level courses are "Sophomore level" courses; 300-and 400-level courses are "upper division" courses). Majors may not count toward the major requirement more than one of the "Nature of literature" courses in poetry, drama, and fiction, but may count one of these plus 'Nature of Literature; Practical Criticism'. Majors may count toward the major requirement any Humanities course taught by a member of the English department.

Majors enrolled in the Teacher Certification Program may count six of their nine credits for the TCP seminar and practice teaching toward the major (the equivalent of two advanced courses). Transfer students may count toward the English major requirement no more than five English courses taken elsewhere; such courses must have received a grade of C or better and must be beyond the freshman English level. Transfer students must take, therefore, at least five English courses offered at U. Mass-Boston. Students needing advice as to how to classify and count such courses should consult the Director of the Undergraduate major. Students currently enrolled who wish to take summer school courses elsewhere for credit toward the English major here must apply for approval in advance, should secure course approval forms from the Registrar, and should consult the Director of the Undergraduate major during the preceding Spring.

Students may use the pass/fail option in courses that count toward the major. They should however, consult with their departmental advisors before doing so. Students planning to attend graduate school should use such an option in the major field sparingly.

#### ENGLISH COLLEGE II

##### Graduation Requirements

All College II English majors, beginning with the class of 1977, must take English 206-207; both semesters are required for the degree but either 206 or 207 may be used as prerequisite for 300 and 400 level courses. Students in College I taking College II English courses may satisfy the prerequisite with the required Course in their department. Transfer students, upon the approval of the Director of the Undergraduate major, may substitute an equivalent course from another school as prerequisite. Majors must also take eight other English courses at the 200 level or above, one of which must be in a period before 1800. Any two humanities courses taught by members of either English department may be counted toward the total number of English courses required for the major. Courses numbered under 300 have no prerequisites other than freshman English and are open to non-majors as well as majors. Non-English majors, students majoring in an interdisciplinary program, and students in OptionB may request instructors to waive the prerequisite for 300 and 400 level courses: In such cases permission to enroll in a course is at the discretion of the instructor.

#### ENGL

##### 010 FRESHMAN ENGLISH

INTENSIVE WORK ON FUNDAMENTALS OF GRAMMAR, PUNCTUATION AND RHETORIC. CONTINUOUS PRACTICE IN WRITING AND IN REVISING. RESTRICTED TO STUDENTS ADVISED TO TAKE THIS COURSE BY THE DIRECTOR OF FRESHMAN ENGLISH. THIS COURSE DOES NOT COUNT TOWARD THE COLLEGE I WRITING REQUIREMENT.

3 LECT HRS  
STAFF

4 CREDITS



|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| ENGL 100 | INTENSIVE WORKSHOP IN ENGLISH AS A SECOND LANGUAGE<br>THIS COURSE IS GIVEN DURING THE SUMMER SEMESTER. IT INCLUDES INTENSIVE WORK IN GRAMMAR, ORAL/AURAL SKILLS, READING COMPREHENSION AND COMPOSITION. THE COURSE RUNS FOR A MINIMUM OF 4 WEEKS AND MEETS DAILY, MONDAY THROUGH THURSDAY, FOR 1 1/2 HOURS EACH DAY. IT IS OPEN TO INCOMING FRESHMEN AND TRANSFER STUDENTS.<br>6 LECT HRS<br>ESL STAFF                                                                                                                                                                                                                                                          | 4 CREDITS |
| ENGL 100 | ORAL/AURAL SKILLS FOR STUDENTS OF ENGLISH AS A SECOND LANGUAGE<br>THIS COURSE INTEGRATES THE COMPONENT PROCESSES OF SPEAKING -ORAL PRODUCTION- AND LISTENING -AURAL COMPREHENSION- TO DEVELOP COMMUNICATIVE COMPETENCIES NECESSARY TO FUNCTION IN THE EDUCATIONAL AND SOCIAL ENVIRONMENT OF THE URBAN UNIVERSITY. STUDENTS ARE ENROLLED IN THE COURSE AFTER HAVING TAKEN THE DIAGNOSTIC TEST ADMINISTERED BY THE ESL STAFF.<br>3 LECT HRS<br>ESL STAFF                                                                                                                                                                                                          | 2 CREDITS |
| ENGL 100 | READING COMPREHENSION FOR STUDENTS OF ENGLISH AS A SECOND LANGUAGE<br>THIS COURSE IS DESIGNED TO IMPROVE THE STUDENT'S ABILITY TO COMPREHEND TEXTBOOKS AND OTHER MATERIAL APPROPRIATE TO UNIVERSITY-LEVEL STUDIES. EMPHASIS IS ON BUILDING VOCABULARY AND COMPREHENDING SOPHISTICATED SYNTACTIC STRUCTURES. STUDENTS ARE ENROLLED IN THE COURSE AFTER HAVING TAKEN THE DIAGNOSTIC TEST ADMINISTERED BY THE ESL STAFF.<br>3 LECT HRS<br>ESL STAFF                                                                                                                                                                                                                | 2 CREDITS |
| ENGL 100 | FUNDAMENTALS OF ENGLISH GRAMMAR FOR ESL STUDENTS<br>THIS COURSE IS A REVIEW OF THE FUNDAMENTAL GRAMMATICAL PRINCIPLES OF ENGLISH. EMPHASIS IS ON SPOKEN ENGLISH WITH WRITTEN REINFORCEMENT OF ORAL PATTERNS. STUDENTS ARE ENROLLED IN THE COURSE AFTER HAVING TAKEN THE DIAGNOSTIC TEST ADMINISTERED BY THE ESL STAFF.<br>3 LECT HRS<br>ESL STAFF                                                                                                                                                                                                                                                                                                               | 2 CREDITS |
| ENGL 101 | FRESHMAN ENGLISH I<br>PRACTICE IN WRITING ON VARIOUS KINDS OF TOPICS CHOSEN TO DEVELOP STUDENT'S CONFIDENCE AND ABILITY AS WRITERS. READINGS AND MATERIALS WILL VARY FROM SECTION TO SECTION. BUT ALL SECTIONS REQUIRE A MINIMUM OF EIGHT PAPERS.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                        | 4 CREDITS |
| ENGL 102 | FRESHMAN ENGLISH II<br>PRACTICE IN WRITING ON KINDS OF TOPICS OFTEN ENCOUNTERED IN COLLEGE COURSES. READINGS AND MATERIALS WILL VARY FROM SECTION TO SECTION. BUT ALL SECTIONS REQUIRE A MINIMUM OF SEVEN PAPERS.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                        | 4 CREDITS |
| ENGL 110 | ENGLISH COMPOSITION FOR FRESHMEN<br>AN INTENSIVE COURSE IN BASIC ENGLISH COMPOSITION, OFFERED IN SMALL SECTIONS FOR A LIMITED NUMBER OF STUDENTS WHO SEEK SPECIAL HELP IN THE MASTERY OF BASIC WRITING SKILLS. CLASSES MEET THREE OR FOUR TIMES EACH WEEK. TUTORIALS OR DRILL SESSIONS ARE ARRANGED IN ADDITION. ENROLLMENT IS LIMITED TO FRESHMEN FOR WHOM THIS COURSE IS RECOMMENDED ON THE BASIS OF VERBAL APTITUDE SCORES AND WRITING SAMPLES. SUCCESSFUL COMPLETION OF THIS COURSE COUNTS IN LIEU OF ENGLISH 101 TOWARD SATISFACTION OF THE COLLEGE FRESHMAN WRITING REQUIREMENT. ENGL 101 AND 110 CANNOT BOTH BE TAKEN FOR CREDIT.<br>3 LECT HRS<br>STAFF | 4 CREDITS |
| ENGL 201 | ORIGINS OF THE MODERN PERIOD<br>READINGS PRIMARILY IN THE MAJOR LITERATURE OF THE NINETEENTH CENTURY IN A VARIETY OF GENRES. WORKS BY SUCH AUTHORS AS BLAKE, WORDSWORTH, THORPE, MELVILLE, DICKENS, DOSTOEVSKY, INSEN, AND CHEKHOV. SPECIAL ATTENTION TO WRITING.<br>3 LECT HRS<br>MR. FROERICK, MR. STOCK, MR. MEYER                                                                                                                                                                                                                                                                                                                                           | 4 CREDITS |
| ENGL 202 | MASTERPIECES OF TWENTIETH CENTURY LITERATURE<br>READINGS PRIMARILY IN THE MAJOR LITERATURE OF THE TWENTIETH CENTURY IN A VARIETY OF GENRES. WORKS BY SUCH AUTHORS AS YEATS, FLORI, JOYCE, FAULKNER, MANNA, GORE, LAWRENCE, BRECHT, AND HECKETT. SPECIAL ATTENTION TO WRITING.<br>3 LECT HRS<br>MS. DITMAR, MR. STOCK, MR. RYAN, MR. MARVIN, MS. BERSHTEL                                                                                                                                                                                                                                                                                                        | 4 CREDITS |
| ENGL 203 | INTRODUCTION TO SHAKESPEARE<br>A ONE-SEMESTER INTRODUCTION TO SHAKESPEARE'S ART THROUGH THE STUDY OF A REPRESENTATIVE GROUP OF HIS PLAYS. SPECIAL ATTENTION TO WRITING.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 4 CREDITS |
| ENGL 204 | PRACTICAL CRITICISM<br>CLOSE READING OF A LIMITED NUMBER OF WORKS AS AN INTRODUCTION TO LITERARY STUDIES. SPECIAL ATTENTION TO WRITING.<br>PREREQUISITE: ENGLISH 102<br>3 LECT HRS<br>MS. HOPTON, MR. RYAN, MR. WICKER                                                                                                                                                                                                                                                                                                                                                                                                                                          | 4 CREDITS |
| ENGL 205 | WOMEN AND MEN IN NINETEENTH CENTURY LITERATURE<br>A STUDY OF MEN AND WOMEN AND THEIR RELATIONSHIPS IN 19TH CENTURY LITERATURE, MAINLY BRITISH, WITH SPECIAL EMPHASIS ON THE ISSUES OF MASCULINE AND FEMINE SEXUAL IDENTITY AND SEXUAL STEREOTYPES AND THE SOCIAL POSITION OF MEN AND WOMEN AS THESE ARE TREATED IN POPULAR CULTURE AND SERIOUS LITERARY WORKS.<br>3 LECT HRS<br>MS. HUNT, MS. SMITH                                                                                                                                                                                                                                                             | 4 CREDITS |
| ENGL 206 | INTRODUCTION TO LITERARY STUDY<br>AN INTRODUCTION TO ENGLISH LITERATURE WITH THE EMPHASIS ON A FEW WRITERS SUCH AS CHAUCER, SHAKESPEARE, MILTON, DUNNE AND SWIFT YEATS. SOME ATTENTION TO WRITING. FOUR PAPERS PER SEMESTER.<br>PREREQUISITE: FRESHMAN WRITING<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                           | 4 CREDITS |
| ENGL 207 | INTRODUCTION TO LITERARY STUDY<br>AN INTRODUCTION TO ENGLISH LITERATURE WITH THE EMPHASIS ON A FEW WRITERS SUCH AS AUSTEN, TENNYSON, KEATS, DICKENS, AND YEATS. SOME ATTENTION TO WRITING. FOUR PAPERS PER SEMESTER.<br>PREREQUISITE: FRESHMAN WRITING<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                   | 4 CREDITS |
| ENGL 210 | INTRODUCTION TO CREATIVE WRITING<br>AN INTRODUCTION TO CREATIVE WRITING WITH PARTICULAR BUT NOT EXCLUSIVE EMPHASIS ON POETRY.<br>PREREQUISITE: 2 SEMESTERS OF FRESHMAN WRITING OR 1 SEMESTER OF FRESHMAN WRITING AND DEPARTMENTAL APPROVAL<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                               | 4 CREDITS |
| ENGL 211 | THE NATURE OF LITERATURE: EMPHASIS ON POETRY<br>THE ART OF POETRY AND THE IMAGINATION OF POETS. AN INTRODUCTION TO THE VARIOUS CRITICAL APPROACHES TO THE UNDERSTANDING AND APPRECIATION OF POETRY. TECHNIQUES OF CLOSE READING OF DRAMA AND POETRY WITH SPECIAL ATTENTION TO POETIC LANGUAGE AND POETIC FORMS AND THEIR RELATION TO THE OTHER TWO GENRES, AS WELL AS THE WRITING OF CRITICAL AND INTERPRETIVE PAPERS.<br>PREREQUISITE: ENGLISH 101 AND 102 OR 101 AND INSTRUCTOR'S APPROVAL<br>3 LECT HRS<br>MR. WILLEY, DR. SMITH                                                                                                                             | 4 CREDITS |
| ENGL 212 | THE NATURE OF LITERATURE: EMPHASIS ON DRAMA<br>THE ART OF DRAMA AND THE IMAGINATION OF DRAMATISTS. AN INTRODUCTION TO THE VARIOUS CRITICAL APPROACHES TO THE UNDERSTANDING AND APPRECIATION OF DRAMA. TECHNIQUES OF CLOSE READING OF POETRY, FICTION, AND DRAMA WITH SPECIAL ATTENTION TO THE LANGUAGE AND FORM OF DRAMA AND THEIR RELATION TO THE OTHER TWO GENRES, AS WELL AS THE WRITING OF CRITICAL AND INTERPRETIVE PAPERS.<br>PREREQUISITE: ENGLISH 101 AND 102 -OR- 101 AND THE INSTRUCTOR'S                                                                                                                                                             | 4 CREDITS |



- APPROVAL  
3 LECT HRS  
MR. SLOVER, MR. BARCOCK
- ENGL 253 INTRODUCTION TO LITERATURE IN AMERICA II  
MAJOR PERIODS, THEMES, AND STYLES OF AMERICAN LITERATURE SINCE  
THE END OF THE CIVIL WAR. FICTION, DRAMA, AND POETRY. MAJOR WRITERS  
SUCH AS TWAIN, JAMES, FITZGERALD, HEMINGWAY, FROST AND ELIOT.  
PREREQUISITE: ENGLISH 101 AND 102  
3 LECT HRS  
STAFF  
4 CREDITS
- ENGL 260 FORMS OF ENGLISH AND AMERICAN DRAMA SINCE 1660  
CONSIDERATION OF DRAMA IN ENGLISH SINCE 1660, WITH REFERENCE TO  
EARLIER DRAMATIC FORMS AND EUROPEAN WORKS WHERE APPROPRIATE.  
SPECIAL ATTENTION TO THE VARIETY OF TECHNIQUES UNIQUELY AVAILABLE  
TO THE DRAMATIST. CRITICAL PAPERS REQUIRED.  
PREREQUISITE: ENGLISH 102  
3 LECT HRS  
MR. BARCOCK, MR. SLOVER, MR. CROSSLEY  
4 CREDITS
- ENGL 280 TEACHING COMPOSITION TO ESL STUDENTS  
THIS COURSE, FOR PROSPECTIVE TEACHERS AND TUTORS, IS AN INTRODUCTION  
TO THE PROBLEMS PRESENTED BY STUDENTS FOR WHOM ENGLISH IS A SECOND  
LANGUAGE. IT WILL CONCENTRATE PRIMARILY UPON THE CORRECTION OF ERRORS  
IN WRITTEN WORK AND THE WAYS TO AVOID AND PREVENT SUCH ERRORS.  
STUDENTS WILL PLAN ONE SAMPLE LESSON AND PARTICIPATE IN TUTORIAL  
SESSIONS BASED ON ACTUAL CLASSROOM SITUATIONS.  
1 1/2 LECT HRS FOR 8 WEEKS  
MS. LEZBERG  
1 CREDIT
- ENGL 291 THE TEACHING OF WRITING  
THIS COURSE PROVIDES EXPOSURE TO A WIDE RANGE OF IDEAS ON THE TEACH-  
ING OF WRITING ANALYSIS AND DISCUSSION OF A NUMBER OF METHODS AND  
APPROACHES AND TRAINING, THROUGH GROUP DISCUSSION OF SAMPLE PAPERS  
AND SOME ROLE-PLAY, IN HOW TO USE THEM.  
1 1/2 LECT HRS FOR 8 WEEKS  
MS. FEINBERG  
1 CREDIT
- ENGL 292 THE TEACHING OF READING  
THIS COURSE, FOR PROSPECTIVE TEACHERS AND TUTORS, PROVIDES EXPOSURE  
TO A WIDE RANGE OF IDEAS ON THE TEACHING OF READING. IT INCLUDES  
ANALYSIS AND DISCUSSION OF A NUMBER OF CONTROVERSIES, METHODS, AND  
APPROACHES. APPLICATIONS TO CLASSROOM OR TUTORIAL SETTINGS COMPRISE A  
SIGNIFICANT PORTION OF THE COURSE.  
3 LECT HRS FOR 5 WEEKS  
MS. GALLO, MS. MEYER  
1 CREDIT
- ENGL 300 CREATIVE WRITING I  
TECHNIQUES AND FORMS OF FICTION AND POETRY. CLASSROOM DISCUSSION OF  
STUDENT MANUSCRIPTS AND FREQUENT CONFERENCES.  
PREREQUISITE: PERMISSION OF INSTRUCTOR.  
3 LECT HRS  
STAFF  
3 CREDITS
- ENGL 301 CREATIVE WRITING II  
TECHNIQUES AND FORMS OF FICTION AND POETRY.  
DISCUSSION OF STUDENT MANUSCRIPTS AND FREQUENT CONFERENCES.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
ENGLISH 300 STAFF  
3 CREDITS
- ENGL 302 ADVANCED COMPOSITION: THEORY AND PRACTICE  
IMPROVEMENT OF PRACTICAL WRITING SKILLS. EXERCISES IN SUCH  
MODES AS DESCRIPTION, NARRATION, AND EXPOSITION. TO DEVELOP  
ANALYTIC AND ARGUMENTATIVE CAPACITIES. SECTIONS VARY IN  
EMPHASIS FROM EXPERIMENTAL WRITING AND THE COMPOSING  
PROCESS, TO WRITING FOR PRE-LAW STUDENTS, TO TECHNIQUES OF  
THE NEW JOURNALISM, TO TECHNIQUES OF RESEARCH FOR LONG  
PAPERS.  
PREREQUISITE: ENGLISH 240 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
STAFF  
3 CREDITS
- ENGL 303 CREATIVE WRITING WORKSHOP I  
304 THE STRUCTURING OF CHAPTERS OF A SHORT NOVEL, THE THEMATIC  
RELATIONSHIPS IN A SERIES OF STORIES OR POEMS, AND DEVELOPMENT OF
- APPROVAL  
3 LECT HRS  
MR. SLOVER, MR. BARCOCK
- ENGL 213 THE NATURE OF LITERATURE: EMPHASIS ON FICTION  
AN INTRODUCTION TO THE VARIOUS CRITICAL APPROACHES TO THE  
UNDERSTANDING AND APPRECIATION OF FICTION.  
TECHNIQUES OF CLOSE READING OF FICTION, POETRY AND  
DRAMA. WITH SPECIAL ATTENTION TO THE LANGUAGE AND FORM OF  
FICTION AND THEIR RELATION TO THE OTHER TWO GENRES, AS WELL AS THE  
WRITING OF CRITICAL AND INTERPRETIVE PAPERS.  
PREREQUISITE: ENGLISH 101 AND 102 - OR 101 AND THE INSTRUCTOR'S  
APPROVAL-  
3 LECT HRS  
MS. ROBINSON, MS. TRUESDELL  
4 CREDITS
- ENGL 214 THE NATURE OF LITERATURE: EMPHASIS ON PRACTICAL CRITICISM  
METHODS, AIDS, AND PRACTICAL ASPECTS OF STUDYING LITERATURE  
THE READING PROCESS: WRITING OF CRITICAL AND INTERPRETIVE PAPERS: THE  
ORGANIZATION OF LITERARY STUDY BY THEME, MODE, FORM AND GENRE.  
HISTORICAL EPOCH, AND AUTHOR.  
PREREQUISITE: ENGLISH 101 AND 102 OR 101 AND INSTRUCTOR'S APPROVAL  
3 LECT HRS  
MR. HART, MR. BLAIR, MR. DIVVER  
4 CREDITS
- ENGL 219 BLACK LITERATURE IN AMERICA  
A SURVEY WITH ATTENTION TO THE INTERACTION OF MUSICAL, ORAL, AND  
LITERARY FORMS IN BLACK EXPRESSION, INCLUDING SLAVE SONGS, BLUES  
LYRICS, SERMONS, ALSO, WORKS BY HUGHES, WRIGHT, BARAKA, BROOKS AND  
OTHERS.  
PREREQUISITE: ENGLISH 102  
3 LECT HRS  
MS. BROWN (SMARIAT), MS. DAVIS, MS. TRUESDELL  
4 CREDITS
- ENGL 240 INTERMEDIATE COMPOSITION  
A COMPOSITION COURSE OFFERING CONTINUED PRACTICE IN EXPOSITORY AND  
ARGUMENTATIVE WRITING WITH OCCASIONAL EXERCISES IN DESCRIPTIVE AND  
NARRATIVE MODES OF COMPOSITION. THE EMPHASIS WILL BE ON THE DEVELOP-  
MENT OF RHETORICAL CONCEPTS - DEFINITION, EXEMPLIFICATION, COMPARISON,  
ETC. - FOR BOTH ANALYTIC AND COMPOSITIONAL PURPOSES, FOR BOTH  
CRITICAL READING AND THE ORGANIZATION AND DEVELOPMENT OF PAPERS.  
READINGS WILL BE SHORT, COMPLEX PASSAGES REPRESENTATIVE OF THE KINDS  
OF DISCOURSE COLLEGE COURSES INVOLVE.  
PREREQUISITE: ENGLISH 102  
3 LECT HRS  
STAFF  
4 CREDITS
- ENGL 250 INTRODUCTION TO BRITISH LITERATURE I  
THE MAJOR PERIODS, GENRES, AND WRITERS OF ENGLISH LITERATURE AND THE  
RELATIONSHIP BETWEEN LITERATURE AND SOCIAL AND INTELLECTUAL HISTORY.  
COVERS THE PERIOD FROM THE MIDDLE AGES TO THE 18TH CENTURY, INCLUDING  
SUCH AUTHORS AS CHAUCER, MILTON, SWIFT AND POPE.  
3 LECT HRS  
STAFF  
4 CREDITS
- ENGL 251 INTRODUCTION TO BRITISH LITERATURE II  
A SURVEY OF THE MAJOR ENGLISH WRITERS FROM THE 18TH CENTURY TO THE  
20TH CENTURY. EMPHASIZES POETRY, SOME PROSE DOCUMENTS, AND SEVERAL  
MAJOR NOVELS.  
PREREQUISITE: ENGLISH 101 AND 102  
3 LECT HRS  
MR. KNIGHT, MS. MULL, MR. WILLEY  
4 CREDITS
- ENGL 252 INTRODUCTION TO LITERATURE IN AMERICA I  
A STUDY OF THE MAJOR WRITERS AND MAJOR PERIODS OF AMERICAN  
LITERATURE FROM THE PURITANS THROUGH THE CIVIL WAR, INCLUDING SUCH  
WRITERS AS HADSFORD, MATHER, FRANKLIN, HAWTHORNE, MELVILLE, THOREAU,  
EMERSON, AND WHITMAN.  
PREREQUISITE: ENGLISH 101 AND 102  
3 LECT HRS  
STAFF  
4 CREDITS

|      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |
|------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| ENGL | 310 | THE MEDIEVAL PERIOD<br>THE CONCERNS AND TECHNIQUES OF OLD AND MIDDLE ENGLISH WRITERS<br>INCLUDING THE HEWULF AND GAWAIN POETS, THE WAKEFIELD DRAMATIST,<br>GOVER, LANGLAND, CHAUCER, AND MALORY.<br>PREREQUISITE: INTRODUCTORY COURSE ACCORDING TO COLLEGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3 CREDITS |
|      |     | 3 LECT HRS<br>MS. MC ALPINE, MS. MENDILLO, MS. SHANER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |
| ENGL | 312 | THE RENAISSANCE<br>MAJOR WORKS OF LITERATURE IN THE ENGLISH RENAISSANCE<br>MAJOR AUTHORS SELECTED FROM AMONG THE FOLLOWING: MORE, MARLOWE,<br>SPENSER, SHAKESPEARE, JOHNSON, DONNE AND MILTON. SUPPLEMENTARY READINGS<br>IN RENAISSANCE CRITICISM.<br>PREREQUISITE: INTRODUCTORY COURSE ACCORDING TO COLLEGE                                                                                                                                                                                                                                                                                                                                                                                                               | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |
| ENGL | 314 | THE NEO-CLASSICAL PERIOD<br>THE CHIEF INTELLECTUAL AND SOCIAL CURRENTS OF THE ENGLISH RESTORATION<br>AND 18TH CENTURY, AND OF THE WORKS OF SUCH WRITERS AS DRYDEN, SWIFT,<br>POPE, DEFOE, FIELDING, JOHNSON, AND BURKE.<br>PREREQUISITE: 1 SEMR ENGLISH COURSE                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |
| ENGL | 315 | THE ROMANTIC PERIOD<br>THE LITERATURE AND LEADING IDEAS OF ENGLISH ROMANTICISM, WITH<br>SPECIAL EMPHASIS ON THE POETRY AND PROSE OF BLAKE, WORDSWORTH,<br>COLERIDGE, BYRON, KEATS, AND SHELLEY.<br>PREREQUISITE: INTRODUCTORY COURSE ACCORDING TO COLLEGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |
| ENGL | 316 | THE VICTORIAN AGE<br>REARINGS IN SUCH AUTHORS AS CARLYLE, TENNYSON, DICKENS,<br>BROWNING, NEWMAN, ARNOLD, HOPKINS, AND PATHE. MOST WORK WILL<br>BE STUDIED IN THE CONTEXT OF THE LITERARY, INTELLECTUAL, AND<br>SOCIAL HISTORY OF THE VICTORIAN AGE. ACCEPTABLE TO COLLEGE                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |
| ENGL | 320 | AMERICAN ROMANTICISM<br>THE GROWING IMPORTANCE OF SYMBOL AND IDEAL IN THE PERIOD FROM<br>1836 TO 1865. EMPHASIS ON ROMANTIC IMAGINATION IN POE, EVERTON,<br>THORFAIR, Hawthorne, AND MELVILLE, WITH READINGS IN THE CAMBRIDGE<br>SCHOOL AND THE MINOR TRANSCENDENTALISTS.<br>PREREQUISITE: INTRODUCTORY COURSE ACCORDING TO COLLEGE                                                                                                                                                                                                                                                                                                                                                                                        | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |
| ENGL | 322 | THE RISE OF AMERICAN REALISM<br>THE EMERGENCE OF REALISM IN THE FICTION OF TWAIN, JAMES AND<br>HOWELLS, AND ITS DEVELOPMENT INTO THE NATURALISM OF NOBIS, CRANE,<br>HOWELLS.<br>PREREQUISITE: INTRODUCTORY COURSE ACCORDING TO COLLEGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3 CREDITS |
|      |     | 3 LECT HRS<br>MR. KATZ, MR. TRIMBLE, MR. O'CONNELL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |
| ENGL | 324 | THE MODERN PERIOD<br>READINGS IN SUCH WRITERS AS ELIOT, HEMINGWAY, LAWRENCE, JOYCE,<br>FAULKNER, AUDEN, THOMAS, LOWELL, YEATS, STEVENS, AND LESSING.<br>PREREQUISITE: INTRODUCTORY COURSE ACCORDING TO COLLEGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |
| ENGL | 325 | TWENTIETH CENTURY LITERARY CRITICISM<br>AN INTRODUCTION TO TRENDS AND ISSUES IN TWENTIETH CENTURY LITERARY<br>CRITICISM WITH ATTENTION TO BOTH THEORETICAL AND PRACTICAL CONCERNS.<br>SUCH TOPICS AS THE MYTHIC, PSYCHOLOGICAL, STRUCTURALIST, FORMALIST,<br>AND SOCIOLOGICAL APPROACHES, AND SUCH ISSUES AS THE NATURE OF<br>LITERARY CHANGE, AND THE IDEA OF TECHNIQUE AS DISCOVERY, AND THE<br>FUNCTION OF LITERATURE IN SOCIETY AND FOR THE INDIVIDUAL.                                                                                                                                                                                                                                                                | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |
| ENGL | 330 | HISTORY OF THE ENGLISH LANGUAGE<br>DEVELOPMENT OF THE ENGLISH LANGUAGE FROM ITS BEGINNINGS<br>TO THE PRESENT: CONCEPTS AND TECHNIQUES OF DESCRIPTIVE<br>AND HISTORICAL LINGUISTICS.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE OR<br>PERMISSION OF INSTRUCTOR                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |
| ENGL | 332 | OLD ENGLISH LANGUAGE AND LITERATURE<br>THE LANGUAGE AND LITERATURE OF ENGLAND, 449 TO 1150. THE COURSE<br>WILL GIVE STUDENTS A READING KNOWLEDGE OF THE LANGUAGE AND AN<br>INTRODUCTION TO MAJOR LITERARY FORMS.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3 CREDITS |
|      |     | 3 LECT HRS<br>MS. FERGUSON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |
| ENGL | 350 | EARLY CELTIC LITERATURE IN TRANSLATION<br>THE MYTHOLOGICAL AND HEROIC LITERATURE OF IRELAND AND<br>WALES IN ITS CULTURAL CONTEXT, FROM THE EARLIEST WRITTEN SOURCES<br>THROUGH THE LATER MIDDLE AGES.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3 CREDITS |
|      |     | 3 LECT HRS<br>MR. ROWEN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |
| ENGL | 352 | CHAUCER<br>THE CANTERBURY TALS AND SELECTED MINOR WORKS.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3 CREDITS |
|      |     | 3 LECT HRS<br>MS. MCALPINE, MS. MULL, MS. SHANER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |
| ENGL | 355 | MEDIEVAL LYRIC AND BALLAD<br>A COURSE IN MEDIEVAL POPULAR VERSE BEGINNING WITH MEDIEVAL LATIN<br>LYRICS AND STUDENT SONGS IN TRANSLATION AND MOVING THROUGH MIDDLE<br>ENGLISH LYRICS TO THE BALLAD.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3 CREDITS |
|      |     | 3 LECT HRS<br>MS. SHANER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
| ENGL | 360 | RENAISSANCE POETRY<br>THE POETRY OF SPENSER, SIDNEY, SHAKESPEARE, MARLOWE, AND OTHERS.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3 CREDITS |
|      |     | 3 LECT HRS<br>MR. DIVVER, MR. MOHMAN, MS. MULL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |
| ENGL | 361 | SHAKESPEARE'S PLAYS (I): A SURVEY<br>A LECTURE COURSE ON SHAKESPEARE'S COMEDIES, HISTORY PLAYS,<br>AND EARLY TRAGEDIES LARGELY FROM THE FIRST HALF OF<br>SHAKESPEARE'S CAREER IN THE THEATRE, AS THE FIRST HALF OF A<br>YEAR-LONG INQUIRY INTO THE PLAYS, THE COURSE EMPHASIZES<br>CRITICAL INTERPRETATIONS OF INDIVIDUAL PLAYS, BUT IT<br>ATTEMPTS AS WELL TO REVIEW CERTAIN RECURRING ISSUES IN THE<br>UNDERSTANDING OF SHAKESPEARE'S DRAMATIC ART IN GENERAL:<br>THEATRE HISTORY AND THEATRE CONVENTIONS, THEORY OF COMEDY<br>AND THEORY OF TRAGEDY, THE LANGUAGE OF VERSE DRAMA, AND THE<br>DEVELOPMENT OF THE HISTORY PLAY.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE<br>OR PERMISSION OF INSTRUCTOR | 3 CREDITS |
|      |     | 3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |
| ENGL | 362 | SHAKESPEARE'S PLAYS (II): A SURVEY<br>A LECTURE COURSE ON SHAKESPEARE'S PROBLEM PLAYS, MAJOR<br>TRAGEDIES AND LATE ROMANCES, AS THE SECOND HALF OF A<br>YEAR-LONG INQUIRY INTO THE PLAYS, THE COURSE EMPHASIZES<br>CRITICAL INTERPRETATIONS OF INDIVIDUAL PLAYS, AND IT<br>ASSUMES THAT STUDENTS WILL HAVE HAD SOME EXPERIENCE OF<br>SHAKESPEARE'S PLAYS, SUCH AS THOSE IN SHAKESPEARE I. 80Y                                                                                                                                                                                                                                                                                                                              | 3 CREDITS |



|      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |
|------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| ENGL | 363 | ELIZABETHAN AND STUART DRAMA<br>A CRITICAL SURVEY OF MAJOR PLAYS BY SHAKESPEARE'S CONTEMPORARIES.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                   | 3 CREDITS | ENGL | 387 | VICTORIAN POETRY<br>SELECTED WORKS BY TENNYSON, BROWNING, ARNOLD, HOPKINS, AND HARDY.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE<br>3 LECT HRS<br>MR. RADERICK, MR. RYAN, MR. LYONS                                                                                                                                                                                                                                                    | 3 CREDITS |
| ENGL | 364 | ENGLISH POETRY OF THE SEVENTEENTH CENTURY<br>DIVERGENT TRADITIONS IN 17TH CENTURY POETRY, WITH EMPHASIS ON THE SCHOOLS OF DONNE AND JONSON. POETS INCLUDE DONNE, HERBERT, VAUGHAN, MARVELL, JONSON, HERRICK, WALLER, AND CAREW.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE<br>3 LECT HRS<br>MR. DIVVER, MR. FINKELPEARL, MR. SMITH                                                                                | 3 CREDITS | ENGL | 388 | BLACK WOMEN WRITERS<br>PROSE, POETRY AND CRITICISM BY BLACK WOMEN FROM THE EIGHTEENTH CENTURY TO THE PRESENT. READING WILL INCLUDE SLAVE NARRATIVES, COLONIAL AND ABOLITIONIST POETRY, NOVELS FROM THE HARLEM RENAISSANCE WORKS BY BROOKS, MARGARET WALKER, SANCHEZ, RAMBARA AND OTHERS.<br>PREREQUISITE: ENGLISH 211-212-213 OR 214 OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MS. TRUESDELL                                                        | 3 CREDITS |
| ENGL | 364 | MILTON<br>THE MAJOR POETRY AND PROSE OF JOHN MILTON, AN INTENSIVE READING OF PARADISE LOST.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE<br>3 LECT HRS<br>MR. SMITH, MR. MORAHAN                                                                                                                                                                                                                                    | 3 CREDITS | ENGL | 391 | AUTOBIOGRAPHY IN AMERICA<br>THE MAJOR AUTOBIOGRAPHICAL WORKS, FROM COLONIAL TO MODERN TIMES, BY SUCH WRITERS AS FOWARD, FRANKLIN, THOREAU, JAMES, ADAMS, FITZGERALD, MALCOLM X, AND MAILER.<br>PREREQUISITE: INTRODUCTORY COURSE ACCORDING TO COLLEGE.<br>3 LECT HRS<br>STAFF                                                                                                                                                                          | 3 CREDITS |
| ENGL | 368 | ENGLISH EPIC POETRY<br>A STUDY OF THE EPIC AND MOCK-EPIC TRADITION IN ENGLISH POETRY FROM THE RENAISSANCE TO THE ROMANTIC PERIOD. SOME ATTENTION TO ORAL ROOTS OF EPIC AND TO THE HISTORY AND THEORY OF THE GENRE, WITH CLOSE READING OF THREE OF FOUR LONG POEMS CHOSEN FROM THE WORK OF SPENSER, MILTON, DRYDEN, POPE, AND WORDSWORTH.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE<br>3 LECT HRS<br>MR. CROSSLEY | 3 CREDITS | ENGL | 394 | A CRITICAL DECADE IN AMERICAN LITERATURE<br>MAJOR AND REPRESENTATIVE WORKS OF AN IMPORTANT TEN-YEAR PERIOD. EMPHASIS ON WAYS IN WHICH STYLES AND THEMES COHERE AND ON THE RELATIONSHIP OF HISTORY AND LITERATURE. DECADE STUDIED IS ANNOUNCED EACH TERM DURING PRE-REGISTRATION.<br>PREREQUISITE: INTRODUCTORY COURSE ACCORDING TO COLLEGE.<br>3 LECT HRS<br>MR. O'CONNELL, MS. DAVIS                                                                  | 3 CREDITS |
| ENGL | 370 | COLONIAL AMERICAN LITERATURE<br>THE LITERATURE AND THOUGHT OF THE 17TH AND 18TH CENTURIES IN AMERICA, FOCUSED TO PROVIDE A BACKGROUND FOR LATER INTELLECTUAL AND LITERARY DEVELOPMENTS.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE<br>3 LECT HRS<br>MR. GITTLEMAN                                                                                                                                                 | 3 CREDITS | ENGL | 396 | LITERATURE OF THE AMERICAN SOUTH<br>SELECTED READINGS IN THE LITERARY RENAISSANCE OF THE MODERN AMERICAN SOUTH FROM 1920 TO THE PRESENT, INCLUDING SUCH WRITERS AS FAULKNER, WARREN, RAMSON, TATE, WELTY, PORTER, STYRON, AND O'CONNOR. STUDY OF THE FICTION, POETRY AND CRITICISM, WITH EMPHASIS ON THE FICTION.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE<br>3 LECT HRS<br>MR. RYAN                                                 | 3 CREDITS |
| ENGL | 371 | EIGHTEENTH CENTURY ENGLISH FICTION<br>THE EMERGENCE OF THE NOVEL AND ITS FORMAL CHARACTERISTICS AND SOCIAL CONCERNS IN THE WORKS OF SUCH EARLY MASTERS AS DEFOE, RICHARDSON, FIELDING, STERNE, AND AUSTEN, AND IN THE GOTHIC AND RADICAL NOVELISTS.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE<br>3 LECT HRS<br>STAFF                                                                                             | 3 CREDITS | ENGL | 398 | AMERICAN DETECTIVE FICTION<br>A SURVEY OF DETECTIVE FICTION AND THE CRIME NOVEL IN AMERICA. AUTHORS TO BE STUDIED INCLUDE POE, HAMMETT, CHANDLER, CAIN, SPILLANE, ROSS MACDONALD AND OTHERS. FILMS WILL BE SHOWN.<br>PREREQUISITE: ENGLISH 101, 102<br>3 LECT HRS<br>MR. GROVE                                                                                                                                                                         | 3 CREDITS |
| ENGL | 380 | BLAKE<br>READINGS IN LYRICS AND PROPHECIES OF WILLIAM BLAKE.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE<br>3 LECT HRS<br>MR. DIVVER, MR. SCHWEITZER, MR. MORAHAN                                                                                                                                                                                                                                                  | 3 CREDITS | ENGL | 400 | MODERN AMERICAN POETRY<br>MAJOR TRENDS AND FIGURES IN 20TH CENTURY AMERICAN POETRY, FROM THE IMAGIST MOVEMENT AND THE FOUNDING OF MODERNIST POETRY IN 1912 TO 1945, EMPHASIS ON FROST, ELIOT, POUND, WILLIAMS, STEVENS.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE<br>3 LECT HRS<br>STAFF                                                                                                                                              | 3 CREDITS |
| ENGL | 381 | NINETEENTH-CENTURY ENGLISH PROSE FICTION<br>MAJOR NOVELISTS OF THE 19TH CENTURY, SUCH AS AUSTEN, THE BRONTES, Dickens, Thackeray, George Eliot, and Hardy.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE<br>3 LECT HRS<br>STAFF                                                                                                                                                                                      | 3 CREDITS | ENGL | 401 | MODERN BRITISH POETRY<br>BRITISH POETRY FROM 1914 TO THE PRESENT. WRITERS CONSIDERED WILL INCLUDE POETS OF THE FIRST WORLD WAR-SASSOON, JONES, OWEN, ROSENBERG, ELIOT, READ, POETS OF THE THIRTIES - AUDEN, SPENDER, MAC NEICE, POETS WRITING FROM 1945 TO THE PRESENT - MACDONALD, LARKIN, TED HUGHES, DON SILKEN, GEOFFREY HILL, MICHAEL HAMBURGER, AND OTHERS.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE<br>3 LECT HRS<br>MR. WEHR | 3 CREDITS |
| ENGL | 384 | INDUSTRIALISM IN 18TH CENTURY LITERATURE<br>INDUSTRIALISM REFLECTED IN ENGLISH LITERATURE FROM 1760 TO 1840, CONSIDERATION OF AUTHORS SUCH AS AUSTEN, BLAKE, BRONTE, GASKELL, AND                                                                                                                                                                                                                                                 |           |      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |



- |      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |                                                                                                                                                                                                                                                                                                                                                                                                 |
|------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ENGL | 402 | MODERN AMERICAN FICTION<br>MAJOR AMERICAN NOVELISTS FROM ABOUT 1880 TO THE PRESENT. THE ART OF CRANE, DEWEY, WHARTON, DOS PASSOS, HEMINGWAY, FITZGERALD, FAULKNER, AND STET, INCLUDING RECURRENT SOCIAL AND CULTURAL THEMES IN THEIR WORKS.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS                                                                                                                                                                              | ENGL | 410 | THE AMERICAN HERO<br>THROUGH AN EXAMINATION OF SEVERAL REPRESENTATIVE AMERICAN NOVELS, AN ATTEMPT TO DEFINE THE AMERICAN HERO AND THE VALUES HE EMBODIES AS HE WORKS TOWARD SELF-DISCOVERY AND TESTS HIMSELF IN THE WORLD.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS                                                                        |
| ENGL | 403 | MODERN DRAMA<br>A STUDY OF DRAMA IN ENGLISH IN THE TWENTIETH CENTURY, INCLUDING WORKS IN TRANSLATION OF MAJOR INFLUENTIAL FOREIGN PLAYWRIGHTS, ATTENTION TO THE LITERARY THEMES, FORMS, AND STYLES OF MODERN DRAMA, AND TO ASPECTS OF DRAMA IN PERFORMANCE. WORKS BY SUCH AUTHORS AS IBSSEN, CHEKHOV, SHAW, O'NEILL, OETS, RECHETT, MILLER AND OTHERS.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS                                                                   | ENGL | 412 | CONTEMPORARY AMERICAN FICTION<br>A SURVEY OF AMERICAN FICTION SINCE 1950. READINGS SELECTED FROM LONGER AND SHORTER FORMS BY BALDWIN, HELLON, BETTS, GAINES, KELLEY, MAILER, MALAMUD, OATES, OLSEN, PERCY, REED, UPDIKE, VONNEGUT, WRIGHT.<br>3 CREDIT HRS<br>3 CREDITS                                                                                                                         |
| ENGL | 404 | MID-TWENTIETH-CENTURY DRAMA<br>THE IDEAS, VALUES, AND TECHNIQUES OF CONTEMPORARY DRAMA IN THE THEATRE (DRAMA SINCE THE MID-CENTURY).<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS                                                                                                                                                                                                                                                                                     | ENGL | 420 | YEATS<br>YEATS' DEVELOPMENT AS A POET. FROM HIS EARLY PRE-RAPHAELITE POETRY THROUGH HIS LATE-MODERN POEMS, WITHIN THE FRAMEWORK OF IRISH HISTORY AND LITERATURE.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS                                                                                                                                  |
| ENGL | 405 | IRISH LITERATURE<br>LEADING FIGURES OF THE IRISH RENAISSANCE, WITH SPECIAL EMPHASIS ON JOYCE, YEATS, SYNGE, AND O'CASEY.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS                                                                                                                                                                                                                                                                                                 | ENGL | 421 | HENRY JAMES<br>A STUDY OF JAMES' MAJOR WRITINGS, WITH SPECIAL ATTENTION GIVEN TO HIS AESTHETIC AND CULTURAL DEVELOPMENT.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS                                                                                                                                                                          |
| ENGL | 406 | POST-WORLD WAR II COMIC FICTION<br>THE ART AND THE VISION OF CONTEMPORARY LIFE OF SUCH POST-WAR COMIC NOVELISTS AS O'NEILL, NAROKOV, RARTH, RARHELME, PYNCHON, AND RECHETT.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS                                                                                                                                                                                                                                              | ENGL | 422 | FAULKNER<br>FAULKNER'S FICTION STUDIED AS A MAJOR SAGA OF MODERN MAN.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS                                                                                                                                                                                                                             |
| ENGL | 407 | MODERN BRITISH NOVEL<br>THE BRITISH NOVEL FROM JOSEPH CONRAD TO ANTHONY MURGES, WITH STOPS ALONG THE WAY FOR LAWRENCE, WOLF, FORSTER, CARY, WAUGH, GREENE, MURDOCH, AND LESSING.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS                                                                                                                                                                                                                                         | ENGL | 423 | FITZGERALD AND HEMINGWAY<br>REPRESENTATIVE TEXTS BY FITZGERALD AND HEMINGWAY. THEIR AESTHETIC ACHIEVEMENT AND THEIR BIOGRAPHICAL AND HISTORICAL SETTINGS.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS                                                                                                                                         |
| ENGL | 408 | CONTEMPORARY AMERICAN POETRY<br>A COMPREHENSIVE OVERVIEW OF LIVING AMERICAN POETS, PLUS INTENSIVE READINGS IN SELECTED WRITERS SUCH AS ASHERY, LEVERTOV, GINSBERG, LOWELL, WILBUR, AMMONS, HARAKA, PLATH, AND MERWIN. DISCUSSIONS OF INDIVIDUAL POETS ON THEIR OWN MERITS AND AS EXEMPLARS OF CURRENT POETIC SCHOOLS.<br>PREREQUISITE: I POETRY COURSE<br>3 CREDIT HRS<br>3 CREDITS                                                                                                                                    | ENGL | 430 | BLACK POETRY<br>CRITICAL AND HISTORICAL SURVEY OF BLACK POETRY FROM ITS ORAL BEGINNINGS TO THE PRESENT. MINOR EMPHASIS ON HARLEM RENAISSANCE AND MAJOR EMPHASIS ON CONTEMPORARY BLACK ARTS MOVEMENT AFFILIATIONS BETWEEN BLACK POETRY AND BLACK MUSIC, BLACK SOCIAL AND POLITICAL THOUGHT.<br>PREREQUISITE: ENGL 210 OR PERMISSION OF INSTRUCTOR<br>3 CREDIT HRS<br>3 CREDITS                   |
| ENGL | 409 | JEWISH-AMERICAN LITERATURE<br>AN EXPLORATION OF LITERATURE GROWING OUT OF THE MASSIVE IMMIGRATION OF EARLY EUROPEAN JEWS TO THE UNITED STATES IN THE LATE NINETEENTH AND EARLY TWENTIETH CENTURIES: FICTION, MEMOIR, JOURNALISM, OTHER FORMS. CONSIDERATION OF THE EAST EUROPEAN COMMUNITIES FROM WHICH THE IMMIGRANTS CAME, AND OF PARALLELS IN SOME CONTEMPORARY JEWISH WRITERS OF THEMES OF THE IMMIGRANT GENERATION.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS | ENGL | 440 | CONTEMPORARY WOMEN POETS<br>POETRY BY CONTEMPORARY WOMEN WRITERS, WITH SOME ATTENTION TO EARLIER WRITERS AND TO RELEVANT HISTORICAL, SOCIOLOGICAL, AND PSYCHOLOGICAL MATERIALS.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS                                                                                                                   |
| ENGL | 441 | THE ADOLESCENT IN LITERATURE<br>SUCH PROBLEMS AS ADOLESCENT CULTURE, THE RITES OF PASSAGE INTO ADULTHOOD, AND THE LITERARY EXPRESSION OF THESE PHENOMENA, WRITERS SUCH AS WOLFE, SALINGER, CAPOTE, KNOWLES, MCCULLERS, O'NEILL, MISHTMA, GOLDING, LEFSSING, MORAVIA, MAUBIAC, SAGAN ARE INCLUDED.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS                                                                                                                        | ENGL | 442 | THE ADOLESCENT IN LITERATURE<br>SUCH PROBLEMS AS ADOLESCENT CULTURE, THE RITES OF PASSAGE INTO ADULTHOOD, AND THE LITERARY EXPRESSION OF THESE PHENOMENA, WRITERS SUCH AS WOLFE, SALINGER, CAPOTE, KNOWLES, MCCULLERS, O'NEILL, MISHTMA, GOLDING, LEFSSING, MORAVIA, MAUBIAC, SAGAN ARE INCLUDED.<br>PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE STAFF<br>3 CREDIT HRS<br>3 CREDITS |

- ENGL 442 **PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE**  
3 LECT HRS  
MR. BRODERICK, MR. GROVE, MS. VEENENDAAL 3 CREDITS
- ENGL 447 **SALIRE**  
CONSIDERATION OF THE NATURE AND FUNCTION OF SATIRE AND OF ITS  
RELATION TO INTELLECTUAL ATTITUDES AND PROBLEMS, TO SOCIAL  
CRITICISM, AND TO VARIOUS LITERARY FORMS, READING AND DISCUSSION  
OF A RANGE OF MAJOR SATIRICAL WORKS.  
**PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE**  
3 LECT HRS  
MR. BLAIR, MR. KNIGHT 3 CREDITS
- ENGL 443 **NARRATIVE IN THE NOVEL AND FILM**  
THE NATURE OF NARRATIVE AS REVEALED THROUGH A COMPARATIVE STUDY  
OF SELECTED NOVELS AND FILMS, ATTENTION TO THE ARTIST'S USE OF  
SEQUENCE, IMAGERY, POINT OF VIEW, AND OTHER ASPECTS OF TECHNIQUE.  
**PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE**  
3 LECT HRS  
MS. OITTMAR 3 CREDITS
- ENGL 444 **LITERARY CRITICISM**  
AN EXPLORATION OF LITERARY MEANING AND THE CHARACTER OF LANGUAGE AS  
A SYMBOLIC FORM. THERE WILL BE A SPECIAL EMPHASIS ON THE STRUCTURE  
OF METAPHOR, PSYCHOLOGICAL AND PHILOSOPHICAL ASPECTS OF LANGUAGE WILL  
ALSO BE CONSIDERED: BASIC CONCEPTIONS OF MEANINGS, THEORIES AND THE  
ORIGIN OF SPEECH; PROBLEMS OF INTENTION, EXPRESSION AND  
INTERPRETATION; BACKGROUND OF MODERN THEORIES OF GRAMMAR, SEMANTICS,  
AND SEMIOTICS.  
**PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE**  
3 LECT HRS  
MR. MARKS, MR. BRODERICK 3 CREDITS
- ENGL 445 **POETRY AND POETICS**  
AN INTRODUCTION TO POETRY, ITS NATURE, STRUCTURE, AND FORM.  
**PREREQUISITE: ENGLISH 101 AND 102**  
3 LECT HRS  
MR. LYONS, MR. MARKS, MR. NELSON 3 CREDITS
- ENGL 448 **LANGUAGE AND LITERATURE**  
AN EXPLORATION OF LITERARY MEANING AND THE CHARACTER OF  
LANGUAGE AS A SYMBOLIC FORM. THERE WILL BE A SPECIAL  
EMPHASIS ON THE STRUCTURE OF METAPHOR. PSYCHOLOGICAL  
AND PHILOSOPHICAL ASPECTS OF LANGUAGE WILL ALSO BE  
CONSIDERED: BASIC CONCEPTIONS OF MEANINGS; THEORIES  
OF THE ORIGIN OF SPEECH; PROBLEMS OF INTENTION, EXPRESSION  
AND INTERPRETATION; BACKGROUND OF MODERN THEORIES OF GRAMMAR,  
SEMANTICS, AND SEMIOTICS.  
3 LECT HRS  
MS. BERTHOFF, MR. DIVER 3 CREDITS
- ENGL 478 **INDEPENDENT STUDY I, II**  
A COURSE OF STUDY DESIGNED BY THE STUDENT IN CONJUNCTION WITH A  
SUPERVISING INSTRUCTOR IN A SPECIALIZED SUBJECT, ONE ORDINARILY NOT  
AVAILABLE IN THE STANDARD COURSE OFFERINGS (OR AT LEAST NOT IN THE  
CURRENT SEMESTER). OPEN TO A LIMITED NUMBER OF STUDENTS IN ANY ONE  
SEMESTER. PREFERENCE MAY BE GIVEN TO SENIOR ENGLISH MAJORS WITH A  
CUMULATIVE AVERAGE OF 3.0 OR ABOVE; BUT JUNIORS, NON-MAJORS, AND  
THOSE WITH LOWER AVERAGES WILL NOT BE EXCLUDED FROM CONSIDERATION.  
A WRITTEN PROSPECTUS FOR THE COURSE MUST BE SUBMITTED, AND THE  
PERMISSION OF THE SUPERVISING INSTRUCTOR AND THE DEPARTMENTAL  
CHAIRMAN SECURED. TO REGISTER FOR THIS COURSE, COLLEGE 1 STUDENTS  
SHOULD SEE THE DIRECTOR OF THE UNDERGRADUATE MAJORS.  
**PREREQUISITE: PERMISSION OF INSTRUCTOR AND DEPARTMENT CHAIRMAN**  
HRS BY ARRGT 3 CREDITS  
STAFF
- ENGL 481 **SELECTED TOPICS IN ENGLISH AND AMERICAN LITERATURE**  
482 **VARIOUS EXPERIMENTAL COURSES IN LITERATURE AND RELATED TOPICS ARE**  
OFFERED, NORMALLY JUST ONCE, UNDER THIS RUBRIC. CURRENT TOPICS  
ARE ANNOUNCED EACH SEMESTER DURING THE PRE-REGISTRATION PERIOD.  
**PREREQUISITE: INTRODUCTORY COURSE ACCEPTABLE TO COLLEGE**  
UNLESS OTHERWISE SPECIFIED, CONSULT THE INSTRUCTOR  
3 LECT HRS  
STAFF 3 CREDITS
- ENGL 444 **SENIOR SEMINAR I**  
CLASSES, LIMITED TO FIFTEEN STUDENTS, UNDERTAKE IN-DEPTH STUDY AND  
DISCUSSION OF ADVANCED TOPICS IN BRITISH AND AMERICAN LITERATURE.  
SEMINARS OFFERED ACCORDING TO INTEREST AND DEMAND; QUALIFIED STUDENTS  
ARE INVITED TO PROPOSE TOPICS. SPECIFIC SEMINARS ARE ANNOUNCED  
DURING PRE-REGISTRATION PERIOD.  
**PREREQUISITE: SENIOR STANDING AND PERMISSION OF INSTRUCTOR**  
3 LECT HRS  
STAFF 3 CREDITS
- ENGL 499 **HONORS WORK I, II**  
AN INTENSIVE PROGRAM OF INDIVIDUAL STUDY PLANNED WITH A FACULTY  
HONORS ADVISER WHO WILL PROVIDE COUNSEL AND DIRECTION AS NEEDED AND  
DESIRED. IN THE FIRST SEMESTER, THE STUDENT WILL UNDERTAKE A  
SPECIAL PROJECT OR A PROGRAM OF WIDE READING IN AREAS NOT  
ADEQUATELY COVERED BY THE STUDENT'S COURSES AND INDEPENDENT STUDY.  
SUCCEESSFUL COMPLETION OF THE FIRST SEMESTER MAY REQUIRE A FINAL ORAL  
EXAM ADMINISTERED BY THE HONORS BOARD AND THE ADVISER, AND IS A  
**PREREQUISITE FOR CONTINUANCE IN THE SECOND SEMESTER. THE SECOND**  
SEMESTER FOCUSES ON AN HONORS PAPER, ARISING FROM STUDY DURING THE  
FIRST SEMESTER, WRITTEN WITH THE APPROVAL AND UNDER THE SUPERVISION  
OF THE HONORS ADVISER. DEPARTMENTAL HONORS WILL BE AWARDED ON THE  
BASIS OF BOTH SEMESTERS OF WORK, THE ORAL EXAM, AND THE EVALUATION  
OF THE HONORS PAPER BY THE HONORS BOARD.
- ENGL 544 **PRACTICE TEACHING AND METHODS OF ENGLISH IN SECONDARY SCHOOLS**  
THE ISSUES AND PRINCIPLES OF THE LEARNING AND TEACHING OF SECONDARY  
SCHOOL COMPOSITION, LITERATURE, AND LANGUAGE. SUPERVISION AND  
CRITIQUE OF PRACTICE TEACHING IN THE SCHOOLS.  
**PREREQUISITE: ADMISSION TO TEACHER CERTIFICATION PROGRAM**  
3 LECT HRS, 20 HRS PRACTICE TEACHING 9 CREDITS  
MS. FEINBERG, MS. STEWART
- ENGL 544 **CURRICULUM AND METHODS STUDENTS TEACHING - ENGLISH**  
**PREREQUISITE: ADMISSION TO TEACHER CERTIFICATION PROGRAM**  
3 LECT HRS, 20 LAR HRS (PRACTICE TEACHING) 9 CREDITS  
STAFF
- FRENCH  
Graduation Requirements  
French majors must take a minimum of 30 credits of advanced courses in French.  
Of these, 9 credits are required: French 301, 302 and 303, which students are  
urged to elect in their sophomore year. In addition, the distribution of a  
minimum 21 credits at the junior-senior level must include 3 credits in an  
advanced language in French and 3 credits in an advanced language course  
in French and 3 credits in each of three different periods of French literature  
at the option of the student.  
Students participating in the departmental TCP Program may count six credits  
out of the nine earned in the program toward fulfilling major requirements.  
Moreover, they are urged to take, if at all possible, at least three additional  
credits in French civilization.

It is strongly recommended that French majors elect the following: 1) at least two years of course work in a second foreign language; 2) two semesters of French history or one semester of French History and one semester either of French History or French Art.

Honors Thesis: A student may receive 6 credits toward the total 30 major credits for acceptable work on an honors thesis written in French under the direction of an advisor from the French faculty. See department chairperson.

At the end of the senior year, majors should take a comprehensive oral exam in French, covering three specific fields of French literature and culture (the fields to be chosen by the student), to be eligible for one of the French department prizes.

It is recommended that students--particularly those planning to teach--take the educational testing service (ETS) language proficiency exams in the Spring of their senior year.

FRENCH 101 ELEMENTARY FRENCH I  
INTENSIVE PRACTICE IN THE FOUR LANGUAGE SKILLS, WITH AN AUDIO-LINGUAL APPROACH. FOR STUDENTS WHO HAVE NO CREDITABLE TRAINING IN FRENCH.  
4 LECT HRS., 2 LAB HRS  
MS. AMBROSE-GRILLET AND STAFF  
4 CREDITS

FRENCH 102 ELEMENTARY FRENCH II  
A CONTINUATION OF FRENCH 101. INTENSIVE PRACTICE IN THE FOUR LANGUAGE SKILLS, WITH AN AUDIO-LINGUAL APPROACH. FOR STUDENTS WHO HAVE NO CREDITABLE TRAINING IN FRENCH.  
4 LECT HRS., 2 LAB HRS  
MS. AMBROSE-GRILLET AND STAFF  
4 CREDITS

FRENCH 103 BEGINNING FRENCH FOR READING KNOWLEDGE  
THIS COURSE IS DESIGNED SPECIFICALLY FOR RAPID ACQUISITION OF ABILITY TO READ FRENCH TEXTS IN THE ORIGINAL LANGUAGE. BOTH LITERARY AND NON-LITERARY TEXTS WILL BE USED. ALL DISCUSSIONS, PAPERS AND EXAMINATIONS WILL BE IN ENGLISH. ONLY STUDENTS WITH NO CREDITABLE TRAINING IN FRENCH LANGUAGE WILL BE ADMITTED. THIS COURSE DOES NOT FULFILL ANY PART OF THE LANGUAGE REQUIREMENT.  
3 LECT HRS  
MS. SORFENSON  
4 CREDITS

FRENCH 110 BASIC ORAL FRENCH  
INTENSIVE ORAL PRACTICE AND DRILL OF BASIC LINGUISTIC PATTERNS IN FRENCH FOR STUDENTS WHO HAVE HAD TRAINING IN READING AND WRITING FRENCH BUT LITTLE OR NO ORAL-ORAL WORK. OR WHO NEED TO IMPROVE THEIR ORAL SKILLS TO QUALIFY FOR INTERMEDIATE FRENCH. STUDENTS FROM THE 101-102 SEQUENCE MAY NOT TAKE THIS COURSE FOR CREDIT. STUDENTS COMPLETING 115, WOULD NORMALLY CONTINUE WITH 201 OR 202. THE STUDENT, IF HIS KNOWLEDGE PERMITS, MAY CONTINUE WITH FRENCH 301.  
PREREQUISITE: BACKGROUND IN THE LANGUAGE AND PLACEMENT EXAM.  
SEE DEPARTMENT.  
4 LECT HRS., 2 LAB HRS  
MR. THOMPSON AND STAFF  
4 CREDITS

FRENCH 120 INTERMEDIATE FRENCH I  
INTENSIVE WORK IN THE FOUR LANGUAGE SKILLS WITH CONCENTRATION ON AN AUDIO-LINGUAL APPROACH AND AN INTRODUCTION TO LITERATURE. FOR STUDENTS WITH NO CREDITABLE PREVIOUS TRAINING IN FRENCH WHO INTEND TO CONTINUE THEIR STUDY OF FRENCH LANGUAGE AND LITERATURE AT AN ADVANCED LEVEL. STUDENTS COMPLETING THIS COURSE SATISFACTORILY WILL BE ALLOWED TO ENTER DIRECTLY INTO COURSES AT THE 200 LEVEL AND ABOVE.  
EQUIVALENT TO ONE YEAR OF INTERMEDIATE FRENCH  
PREREQUISITE: MINIMUM SCORE OF 600 ON THE SAT VERBAL OR HIGH UPPER-CLASS COURSE AVERAGE  
4 LECT HRS., 2 LAB HRS  
MS. SORFENSON, AND STAFF  
8 CREDITS

FRENCH 150 FRENCH SEMESTER  
ELEMENTARY AND INTERMEDIATE FRENCH IN ONE SEMESTER, FOR STUDENTS WITH NO PREVIOUS CREDITABLE TRAINING IN FRENCH WHO WISH TO ACQUIRE RAPIDLY A HIGH DEGREE OF COMPETENCY IN WRITTEN AND SPOKEN FRENCH. IN ADDITION TO CLASSROOM CONTACT, THERE WILL BE SPECIAL FILMS, SLIDE SHOWINGS, FRENCH DINING TABLE, IN AN EFFORT TO BRING THE STUDENT AS CLOSE AS POSSIBLE TO AN EXPERIENCE OF TOTAL IMMERSION. FULFILLS THE LANGUAGE REQUIREMENT.  
PREREQUISITE: NO PREVIOUS CREDITABLE TRAINING IN FRENCH AND DEPARTMENTAL PERMISSION  
16 LECT HRS., 4 LAB HRS  
ALONG WITH 4 HRS OF LANGUAGE LAB DRILL  
MS. SORFENSON, MR. MACCOMBIE  
16 CREDITS

FRENCH 201 INTERMEDIATE FRENCH I  
INTENSIVE REVIEW AND FURTHER STUDY OF GRAMMAR AND AUDIO-LINGUAL SKILLS WITH CORRELATED INTERMEDIATE-LEVEL READINGS IN FRENCH LITERATURE.  
PREREQUISITE: FRENCH 102 OR EQUIVALENT.  
4 LECT HRS., 2 LAB HRS  
MS. SORFENSON AND STAFF  
4 CREDITS

FRENCH 202 INTERMEDIATE FRENCH II  
CONTINUATION OF FRENCH 201. INTERMEDIATE-LEVEL READINGS IN FRENCH LITERATURE OR CULTURE. 201 OR EQUIVALENT  
PREREQUISITE: FRENCH 201 OR EQUIVALENT  
4 LECT HRS., 2 LAB HRS  
MS. SORFENSON AND STAFF  
THIS COURSE MAY BE USED TO FULFILL THE SECOND SEMESTER OF INTERMEDIATE-LEVEL LANGUAGE REQUIREMENT  
4 CREDITS

FRENCH 203 INTERMEDIATE FRENCH III  
READINGS IN FRENCH ON CONTEMPORARY FRANCE AND FRENCH-SPEAKING SKILLS - NEWSPAPERS - POLITICS, CURRENT EVENTS, REVIEWS OF ART AND MUSICAL EVENTS, AMONG OTHERS - MAGAZINES, CULTURAL TEXTS-AS DISTINCT FROM PURELY LITERARY TEXTS-- WITH DISCUSSION IN FRENCH. FULFILLS SECOND SEMESTER OF INTERMEDIATE LEVEL LANGUAGE REQUIREMENT.  
PREREQUISITE: FRENCH 115, OR FRENCH 201 OR EQUIVALENT  
4 LECT HRS  
STAFF  
THIS COURSE MAY BE USED TO FULFILL THE SECOND SEMESTER OF INTERMEDIATE-LEVEL LANGUAGE REQUIREMENT  
4 CREDITS

FRENCH 204 INTERMEDIATE FRENCH FOR READING KNOWLEDGE  
THIS COURSE IS DESIGNED TO PERFECT THE STUDENTS READING KNOWLEDGE OF FRENCH SO THAT HE CAN READ IN A WIDE RANGE OF DISCIPLINES WITH ACCURACY AND SPEED. TEXTS WILL BE CHOSEN FROM FRENCH NEWSPAPERS AND MAGAZINES, WORKS DEALING WITH CONTEMPORARY SUBJECTS -E.G. LACOUTURE'S BIOGRAPHIES-- AND SHORT STORIES BY CONTEMPORARY AUTHORS. DISCUSSIONS PAPERS AND EXAMINATIONS WILL BE IN ENGLISH. THIS COURSE MAY FULFILL THE SECOND SEMESTER OF INTERMEDIATE LEVEL LANGUAGE REQUIREMENT.  
PREREQUISITE: FRENCH 103, 115, 201 OR 3 YEARS OF HIGH SCHOOL FRENCH OR THE EQUIVALENT  
3 LECT HRS  
STAFF  
THIS COURSE MAY BE USED TO FULFILL THE SECOND SEMESTER OF INTERMEDIATE-LEVEL LANGUAGE REQUIREMENT  
4 CREDITS

FRENCH 214 ADVANCED READINGS IN FRENCH CULTURE  
THIS COURSE IS DESIGNED FOR STUDENTS WHO HAVE A SOLID COMMAND OF FRENCH FOR READING. IT PERMITS THEM TO USE THEIR KNOWLEDGE IN THE DISCUSSION AND STUDY OF VARIOUS ASPECTS OF THE FRENCH-SPEAKING WORLD, BASED ON TEXTS WRITTEN IN FRENCH AND INCLUDING TOPICS SUCH AS THE ARTS, POLITICS, URBANISM, ECOLOGY, WOMEN'S RIGHTS, ALL DISCUSSIONS, PAPERS AND EXAMS WILL BE IN ENGLISH. MAY FULFILL SECOND SEMESTER OF INTERMEDIATE LANGUAGE REQUIREMENT.  
PREREQUISITE: FRENCH 202, 203, 204 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
STAFF  
THIS COURSE MAY BE USED TO FULFILL THE SECOND SEMESTER OF INTERMEDIATE-LEVEL LANGUAGE REQUIREMENT  
4 CREDITS



- FRENCH 267 NATURE AND STRUCTURE OF FRENCH COMEDY  
EIGHT FRENCH PLAYS, 17TH THROUGH 20TH CENTURY. TWO CLASSICAL  
COMEDIES AND SOME HEADINGS IN THEORY AND CRITICISM. NO KNOWLEDGE  
OF FRENCH REQUIRED. ENGLISH TRANSLATION. MAY FULFILL PART OF THE  
LANGUAGE REQUIREMENT. 3 LECT HRS 4 CREDITS  
MS. RELVEA
- FRENCH 271 THE FEMININE PRESENCE IN FRENCH LITERATURE  
SELECTED LITERARY TEXTS FROM THE MIDDLE AGES TO THE 20TH CENTURY BY  
MEN AND WOMEN WRITERS WHOSE WORK SHOWS SIGNIFICANT CONSCIOUSNESS OF  
THE FORMALIZATION OF GENDER ROLES IN ART AND SOCIETY. WITH SPECIFIC  
EMPHASIS ON THE EVOLUTION OF VARIOUS FEMININE ROLES AS RELATED TO  
SOCIAL AND LITERARY CONTEXT. NO KNOWLEDGE OF FRENCH REQUIRED.  
ENGLISH TRANSLATION. MAY FULFILL PART OF THE LANGUAGE REQUIREMENT.  
3 LECT HRS 4 CREDITS  
MS. RELVEA
- FRENCH 300 DICTION I  
DRILL IN PRONUNCIATION AND PRACTICE OF DICTION. BASED ON TEXTS  
SELECTED FROM THE POETRY AND THEATRE OF VARIOUS PERIODS OF FRENCH  
LITERATURE. EMPHASIS ON ACQUISITION AND PERFECTING OF STANDARD FRENCH  
PRONUNCIATION AND INTONATION.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
2 DRILL HRS 1 CREDIT  
MR. MACOMBRÉ
- FRENCH 301 INTRODUCTION ET STYLISTIQUE  
INTENSIVE STUDY OF GRAMMAR, STYLISTICS AND COMPOSITION. PROBLEMS  
OF IDIOMATIC TRANSLATION BASED ON CONTEMPORARY ENGLISH AND AMERICAN  
TEXTS.  
PREREQUISITE: FRENCH 202 OR EQUIVALENT OR PERMISSION OF INSTRUCTOR.  
3 LECT HRS 3 CREDITS  
STAFF
- FRENCH 302 INITIATION A LA LITTÉRATURE ET A LA CULTURE FRANÇAISES-DEPUIS LE  
MOYEN ÂGE JUSQU'À LA FIN DU XIXE SIECLE  
FRENCH LITERATURE AND CULTURE FROM THE MIDDLE AGES TO THE END OF THE  
19TH CENTURY. SELECTED READINGS FROM CHANSON DE ROLOAND,  
COURTLY NOVELS, LYRIC POETRY OF THE MIDDLE AGES AND RENAISSANCE,  
SANCE, RARELAIS, MONTAIGNE, CORNEILLE, RACINE, MOLIÈRE, LA-  
FONTAINE, WITH LECTURES ON THE CULTURAL BACKGROUND OF THE  
PERIODS STUDIED.  
PREREQUISITE: FRENCH 301 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS 3 CREDITS  
STAFF
- FRENCH 303 INITIATION A LA LITTÉRATURE ET A LA CULTURE FRANÇAISES-18E ET 19E  
SIECLES  
FRENCH LITERATURE AND CULTURE OF THE 18TH AND 19TH CENTURIES.  
SELECTED READINGS FROM: DIDEROT, MARIYAU, VOLTAIRE, ROUSSEAU,  
CHATEAUBRIAND, LAMARTINE, HUGO, VIGNY, MUSSET, HALZAC, BANDELAIRE,  
ZOLA. WITH LECTURES ON THE CULTURAL BACKGROUND OF THE PERIODS  
STUDIED.  
PREREQUISITE: FRENCH 301 OR BY PERMISSION OF THE INSTRUCTOR.  
3 LECT HRS 3 CREDITS  
STAFF
- FRENCH 304 COLLOQUE  
COLLOQUIUM TO BE CONDUCTED IN FRENCH ON A TOPIC CHOSEN BY A GROUP OF  
5-10 STUDENTS IN CONSULTATION WITH AN INSTRUCTOR OR TWO INSTRUCTORS  
OF THEIR CHOOSING.  
PREREQUISITE: FLUENCY IN SPOKEN FRENCH AND PERMISSION OF INSTRUCTOR  
2 HRS EACH WK OR 3 HRS EACH WK FOR 8 WKS 1 CREDIT  
STAFF
- FRENCH 320 COURS AVANCE DE CONVERSATION  
INTENSIVE PRACTICE IN CONVERSATION ON A WIDE VARIETY OF SUBJECTS. FOR  
STUDENTS HAVING ALREADY ACQUIRED A VERY SOLID KNOWLEDGE OF SPOKEN  
FRENCH AND WHO WISH TO CONTINUE PERFECTING THEIR COMPETENCY.  
PREREQUISITE: SOLID COMMAND OF FRENCH AND PERMISSION OF INSTRUCTOR  
3 LECT HRS 3 CREDITS  
STAFF
- FRENCH 215 ADVANCED READINGS IN FRENCH LITERATURE  
DESIGNED FOR STUDENTS WHO READ FRENCH WITH SPEED AND ACCURACY. THIS  
COURSE TREATS VARIOUS ASPECTS OF FRENCH LITERATURE - THE TRADITION OF  
FRENCH POETRY, FRENCH-LANGUAGE AFRICAN AND AMERICAN LITERATURES,  
SURVEY OF FRENCH MASTERPIECES, AMONG OTHERS. TOPICS WILL VARY FROM  
SEMESTER TO SEMESTER. READINGS WILL BE IN FRENCH. ALL DISCUSSIONS,  
PAPERS AND EXAMS WILL BE IN ENGLISH. MAY FULFILL SECOND  
SEMESTER OF INTERMEDIATE LANGUAGE REQUIREMENT.  
PREREQUISITE: FRENCH 202, 203, 204 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS 3 CREDITS  
STAFF  
THIS COURSE MAY BE USED TO FULFILL THE SECOND SEMESTER  
OF INTERMEDIATE-LEVEL LANGUAGE REQUIREMENT
- FRENCH 224 INTENSIVE FRENCH II (EQUIVALENT TO YEAR OF INTERMEDIATE  
FRENCH)  
INTENSIVE WORK IN THE FOUR LANGUAGE SKILLS WITH CONCENTRATION ON AN  
AUDIO-LINGUAL APPROACH AND AN INTRODUCTION TO LITERATURE. FOR  
STUDENTS WITH NO CREDITABLE TRAINING IN FRENCH. STUDENTS COMPLETING  
THIS COURSE SATISFACTORILY WILL BE ALLOWED TO ENTER DIRECTLY INTO  
COURSES AT THE 300 LEVEL AND ABOVE.  
FULFILLS INTERMEDIATE LANGUAGE REQUIREMENT  
PREREQUISITE: DEPARTMENTAL PERMISSION  
3 LECT HRS, 2 LAB HRS 4 CREDITS  
MS. SORENSON AND STAFF
- FRENCH 240 FRENCH CONVERSATION  
DAILY PRACTICE IN CONVERSATION ON A WIDE VARIETY OF SUBJECTS, WITH A  
VIEW TOWARD BUILDING VOCABULARY AND FLUENCY.  
PREREQUISITE: FRENCH 202 OR EQUIVALENT AND  
PERMISSION OF INSTRUCTOR  
3 LECT HRS 4 CREDITS  
MR. THOMPSON
- FRENCH 241 TWENTIETH CENTURY FRENCH NOVEL  
MAJOR FRENCH WRITERS OF THE 20TH CENTURY-GIDE, COCTEAU, FOURNIER,  
MAURIAU, MALRAUX, CAMUS, HOBRE-GILLET. NO KNOWLEDGE OF FRENCH  
REQUIRED. ENGLISH TRANSLATION. MAY FULFILL PART OF THE LANGUAGE  
REQUIREMENT.  
3 LECT HRS 4 CREDITS  
STAFF
- FRENCH 242 CONTEMPORARY FRENCH THEATRE  
SOME OF THE MASTERPIECES OF FRENCH THEATRE FROM GIRAUDOUX TO THE  
THEATRE OF THE ABSURD. NO KNOWLEDGE OF FRENCH REQUIRED.  
ENGLISH TRANSLATION. MAY FULFILL PART OF THE LANGUAGE REQUIREMENT.  
3 LECT HRS 4 CREDITS  
STAFF
- FRENCH 264 FRENCH EXISTENTIAL LITERATURE  
MAJOR WORKS BY CAMUS, SARTRE, HEAUVOIR, CELINE, MALRAUX. NO  
KNOWLEDGE OF FRENCH REQUIRED. ENGLISH TRANSLATION. MAY FULFILL  
PART OF THE LANGUAGE REQUIREMENT.  
3 LECT HRS 4 CREDITS  
MR. PROULX, MR. THOMPSON
- FRENCH 265 MASTERPIECES OF FRENCH LITERATURE  
SELECTED MAJOR TEXTS FROM THE MIDDLE AGES TO THE END OF THE  
NINETEENTH CENTURY. NO KNOWLEDGE OF FRENCH REQUIRED. ENGLISH  
TRANSLATION. MAY FULFILL PART OF THE LANGUAGE REQUIREMENT.  
3 LECT HRS 4 CREDITS  
STAFF
- FRENCH 266 THE FRENCH CINEMA  
THEMATIC AND FORMAL TRENDS IN THE FRENCH CINEMA, IN THE CONTEXT  
OF RELEVANT DEVELOPMENTS IN LITERATURE, CULTURAL AND POLITICAL HISTORY.  
FILMS BY VIGO, BUNUEL, RENOIR, CLAIR, DULAC, COCTEAU, RESNAIS, CARNE,  
TRUFFAUT, GODDARD AND ROHMER. NO KNOWLEDGE OF FRENCH REQUIRED. MAY  
FULFILL PART OF THE LANGUAGE REQUIREMENT.  
3 LECT HRS 4 CREDITS  
STAFF

- FRENCH 334 POETES ET CHANSONNIERS  
THE TRADITION OF THE CHANSON IN FRANCE, FROM THE MEDIEVAL  
THROUBADOURS TO MODERN TIMES, WITH CONTEMPORARY SINGER-COMPOSERS:  
HASSANS, BREL, HARRADA, AND OTHERS.  
PREREQUISITE: FRENCH 201-202 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. THOMPSON  
3 CREDITS
- FRENCH 335 LITTERATURE ET POLITIQUE  
ANALYSIS OF POLITICAL ASPECTS OF MAJOR FRENCH LITERARY TEXTS FROM  
RABELAIS TO CHARLES DE GAULLE.  
PREREQUISITE: FRENCH 202 OR EQUIVALENT  
3 LECT HRS  
STAFF  
3 CREDITS
- FRENCH 340 NINETEENTH CENTURY FRENCH NOVEL IN TRANSLATION  
READINGS AND DISCUSSION OF MAJOR NOVELS OF THE PERIOD FROM  
MADAME DE STAEL, STENDHAL, HUGO, BALZAC, TO FLAUBERT, ZOLA, ROURET  
AND HUYSMANS. NO KNOWLEDGE OF FRENCH REQUIRED. ENGLISH TRANSLATION.  
MAY FULFILL PART OF THE LANGUAGE REQUIREMENT.  
3 LECT HRS  
STAFF  
4 CREDITS
- FRENCH 361 MODERN FRENCH NOVEL IN TRANSLATION, 1900-1935  
WORKS BY PROUST, CUCULAU, GLOE, SAINT-EXUPERY AND MALRAUX. READINGS  
IN ENGLISH; NO KNOWLEDGE OF FRENCH REQUIRED. MAY FULFILL PART OF  
THE LANGUAGE REQUIREMENT.  
3 LECT HRS  
MR. PROULX  
4 CREDITS
- FRENCH 362 MODERN FRENCH NOVEL IN TRANSLATION, 1935 UNTIL THE PRESENT  
WORKS BY SARTRE, CAMUS, MAURIAU, HOFFME-GAILLY AND GENET. NO  
KNOWLEDGE OF FRENCH REQUIRED. ENGLISH TRANSLATION. MAY FULFILL  
PART OF THE LANGUAGE REQUIREMENT.  
3 LECT HRS  
MR. PROULX  
4 CREDITS
- FRENCH 363 THE BLACK SOUL AND THE THEATRE  
A COMPARATIVE APPROACH TO THE IMAGE OF THE BLACK MAN IN CONTEMPORARY  
THEATRE. AN ANALYTICAL AND COMPARATIVE STUDY OF VARIOUS FRENCH  
AND AMERICAN PLAYS BY WHITE AND BLACK FRENCH-SPEAKING WRITERS AND  
ALSO OF AMERICAN PLAYS BY WHITE AND BLACK AMERICAN WRITERS. ALL  
OF THEM DEALING WITH THE EXPERIENCE OF THE BLACK MAN. ENGLISH  
TRANSLATION. MAY FULFILL PART OF THE LANGUAGE REQUIREMENT.  
3 LECT HRS  
STAFF  
4 CREDITS
- FRENCH 380 FRENCH STRUCTURALISM  
A STUDY OF CERTAIN DEVELOPMENTS IN FRANCE WHICH REPRESENT AN ATTEMPT  
TO LAY THE FOUNDATIONS FOR A GENERAL SCIENCE OF MAN ON THE ALREADY  
ESTABLISHED BASE OF STRUCTURAL LINGUISTICS, AND THUS AN EFFORT TO  
DISCOVER THE CONSTITUTIVE RULES FOR THE GRAMMAR OF VARIOUS  
DIFFERENT SYSTEMS OF COMMUNICATION WHICH ARE STRUCTURED LIKE A  
LANGUAGE. READINGS (AND DISCUSSION IN ENGLISH) OF LINGUISTICS:  
SAUSSURE, SEMIOLOGY: HARTHEIS, ANTHROPOLOGY: LEVI-STRAUSS, PSYCHO-  
ANALYSIS: LACAN, HISTORY: FOUCAULT, POLITICAL ECONOMY: ALTHUSSER, AND  
PHILOSOPHY: DEBRIDA.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
STAFF  
3 CREDITS
- FRENCH 400 HISTOIRE DE LA LANGUE FRANCAISE  
SURVEY OF THE EVOLUTION OF FRENCH FROM SPOKEN LATIN TO THE MODERN  
LANGUAGE WITH ANALYSIS OF TEXTS FROM EACH MAJOR PERIOD.  
PREREQUISITE: FRENCH 301, 302, 303, OR 312 OR EQUIVALENT OR  
PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. GRILLET  
3 CREDITS
- FRENCH 401 MOYEN AGE - LE HEROS ET L'ANTI-HEROS  
LITERATURE AS A REFLECTION ON A DISTORTION OF SOCIETY FROM THE  
FIFTEENTH TO THE FIFTEENTH CENTURY, WITH EMPHASIS ON MAN IN REVOLT  
AGAINST OR IN HARMONY WITH HIS MILIEU - VOLAND, LANCELOT, TRISTAN,  
AMON, REYNARD THE FOX, SAINTLY KING LOUIS, CATHELIN, FRANCOIS VILLON.  
PREREQUISITE: FRENCH 302, 303 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. VOLPE  
3 CREDITS
- FRENCH 411 THEME ET VERSION  
TRANSLATION FROM ENGLISH INTO FRENCH, FROM FRENCH INTO ENGLISH,  
ANALYSIS OF THE GRAMMATICAL AND STYLISTIC PROBLEMS OF THE TEXTS  
INVOLVED.  
LITERATURE OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
STAFF  
3 CREDITS
- FRENCH 420 RENAISSANCE - DE L'HUMANISME TRIOMPHANT A L'HUMANISME SCEPTIQUE  
THE HUMANIST GENTLEMAN, MORALIST, LOVER, AND SKEPTIC. SELECTIONS FROM  
THE WORKS OF RABELAIS, RONSARD, DURELLAY, MONTAIGNE, D'AUBIGNIE.  
PREREQUISITE: FRENCH 302, 303 OR PERMISSION OF INSTRUCTOR  
3 LECT-DISC HRS  
MR. VOLPE  
3 CREDITS
- FRENCH 431 LA LITTERATURE DU DIX-SEPTIEME SIECLE: THEATRE ET PHILOSOPHES  
WORKS FROM 17TH CENTURY AUTHORS INCLUDING DESCARTES, CORNEILLE,  
RACINE, MOLIERE AND PASCAL.  
PREREQUISITE: FRENCH 302, 303 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. RELYEA  
3 CREDITS
- FRENCH 432 LA LITTERATURE DU 17E SIECLE: PROSE ET POESIE  
WORKS BY ROSSUET, MOULFRAU, LA FONTAINE, MADAME DE LAFAYETTE,  
LA ROCHEFOUCAULD, MADAME DE SEVIGNE, LA BRUYERE.  
PREREQUISITE: FRENCH 302 OR 312 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
STAFF  
3 CREDITS
- FRENCH 434 IMAGINATION BAROQUE - RESERVE CLASSIQUE  
HEADINGS FROM 17TH CENTURY FRENCH THEATRE, POETRY, NOVELS, AND  
PHILOSOPHY STRUCTURED AROUND THE TWO MAJOR AND OPPOSING LITERARY  
TRENDS OF THE PERIOD. UNDER MAHOUDE, -PRECIEUX- AND -HUMESQUE-  
WRITERS WILL ALSO BE STUDIED. AUTHORS INCLUDE -MOLIERE, VOLTURE,  
D'URF, CORNEILLE, SCARON, MADAME DE LAFAYETTE HOILEAU, LA FONTAINE.  
PREREQUISITE: FRENCH 302 OR 303 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. RELYEA  
3 CREDITS
- FRENCH 441 THEATRE ET ROMAN DU 18 EME SIECLE  
PLAYS BY MARIVAUX AND BEAUMARCHAIS, AND NOVELS BY VOLTATOF, RIDEROT,  
J.-J. ROUSSEAU, LACLOS, D'EUROST, AMONG OTHERS.  
PREREQUISITE: FRENCH 302, 303 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. STERN  
3 CREDITS
- FRENCH 442 LA PENSEE PHILOSOPHIQUE DU 18E SIECLE  
PHILOSOPHICAL TEXTS BY MONTESQUIEU, DIDEROT, VOLTAIRE, ROUSSEAU,  
L'ENCYCLOPEDIA.  
PREREQUISITE: FRENCH 302 OR 312 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. STERN  
3 CREDITS
- FRENCH 443 ROMAN ET THEATRE ROMANTIQUES  
THE FRENCH ROMANTIC THEATRE AND NOVEL THROUGH WORKS BY HUGO, VIGNY,  
MUSSET, SAND, BALZAC, STENDHAL.  
PREREQUISITE: FRENCH 302, 303 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. ARENDSTERN  
3 CREDITS
- FRENCH 455 POESIE SYMBOLISTE  
WORKS SELECTED FROM THE POETRY OF MAUDFLAIRE, VERLAINE, RYHRAUD, AND  
MALLARME.  
PREREQUISITE: FRENCH 302 OR 303 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. MACCOMBIE  
3 CREDITS



- FRENCH 454 POESIE DU 20<sup>ME</sup> SIECLE  
WORKS BY CLAUDEL, APOLLINAIRE, VALERY, FLAUD, AMONG OTHERS.  
PREREQUISITE: FRENCH 302, 303 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. MACCOMBIE  
3 CREDITS
- FRENCH 464 ROMAN DU XIXE SIECLE  
DISCUSSION OF REPRESENTATIVE 19TH CENTURY NOVELS BY WRITERS  
SUCH AS: PROUST, GIDE, MARTIN DU GARD, MAURITAC, MALRAUX, CHAS  
CELINE, SARTRE AND CAMUS, BEAUVOIR, BECKETT, BUTOR, GRILLET, RAS.  
SARRAUTE, AND DURAS.  
PREREQUISITE: FRENCH 302 AND 303 AND PERMISSION OF  
INSTRUCTOR  
3 LECT HRS  
MR. COLLIGNON, MR. PROULX  
3 CREDITS
- FRENCH 465 THEATRE DU XIXE SIECLE  
DISCUSSION OF REPRESENTATIVE 19TH CENTURY PLAYS BY SUCH  
DRAMATISTS AS JARRY, FEYDEAU, CLAUDEL, GIRAUDOUX, MONTHERLANT,  
SARTRE, CAMUS, IONESCO, GENET, AND BECKETT.  
PREREQUISITE: FRENCH 302 AND 303 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. COLLIGNON  
3 CREDITS
- FRENCH 466 LITTERATURE NOIR D'EXPRESSION FRANCAISE  
SELECTED PROSE AND POETRY OF REPRESENTATIVE BLACK AUTHORS IN FRENCH  
SPEAKING COUNTRIES, FOCUSING ON THE WORKS OF SENGHOR, CESAIRE,  
DAMAS, AND CAMARA-LAYE.  
PREREQUISITE: FRENCH 302, 303 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
STAFF  
3 CREDITS
- FRENCH 475 CIVILISATION CONTEMPORAINE  
THE BACKGROUND OF CONTEMPORARY FRANCE, TODAY'S FRANCE, HISTORICAL  
POLITICAL, SOCIAL, ECONOMIC, CULTURAL.  
PREREQUISITE: FRENCH 302, 303 OR EQUIVALENT  
3 LECT HRS  
STAFF  
3 CREDITS
- FRENCH 476 CIVILISATION FRANCAISE I II  
THE BACKGROUND OF FRANCE FROM THE MIDDLE AGES TO THE END OF THE 17TH  
CENTURY: HISTORICAL, POLITICAL, SOCIAL, ECONOMIC, CULTURAL.  
PREREQUISITE: FRENCH 301 OR EQUIVALENT  
3 LECT HRS  
3 CREDITS
- FRENCH 478 INDEPENDENT STUDY  
479 SELECTED RESEARCH TOPICS ORGANIZED IN CONSULTATION WITH AN  
INDIVIDUAL OR WITH A SMALL GROUP OF STUDENTS.  
PREREQUISITE: PERMISSION OF INSTRUCTOR AND CHAIRPERSON OF DEPARTMENT  
HRS BY ARRANGEMENT  
STAFF  
3 CREDITS
- FRENCH 482 SEMINAIRE: EXISTENTIALISME  
WORKS BY GIDE, MALRAUX, CAMUS, SARTRE, DE BEAUVOIR, BECKETT, AND  
CELINE AS THEY REVEAL EXISTENTIALIST CONCEPTS AND THEIR DEVELOPMENT.  
PREREQUISITE: FRENCH 302, 303 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. PROULX, MR. THOMPSON  
3 CREDITS
- FRENCH 486 SEMINAIRE: LEANT DIECEIBE  
A CREATIVE WRITING SEMINAR IN FRENCH, POEMS, PLAYS, SHORT STORIES,  
ESSAYS, PROFESSIONAL CRITICISM AND DISCUSSION.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. PHILIP, MS. RELYEA  
3 CREDITS
- FRENCH 487 SEMINAIRE - UN AUTEUR FRANCAIS IMPORTANT  
IN-DEPTH ANALYSIS OF AN AUTHOR OR OF THE MAJOR WORKS OF AN AUTHOR  
TO BE SPECIFIED EACH YEAR.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
STAFF  
3 CREDITS
- FRENCH 489 LE CINEMA FRANCAIS  
THEMATIC AND FORMAL TRENDS IN THE FRENCH CINEMA, IN THE CONTEXT OF  
RELEVANT DEVELOPMENTS IN FICTION, DRAMA AND CRITICISM. FILMS BY  
VIGO, HUNNELL, CLAIR, DULAC, COCTEAU, CARNE, CHABROL, TRUFFAUT,  
GODARD, RESNAIS, AND ROYER. STUDENTS HAVING RECEIVED CREDIT FOR  
FRENCH 266 MAY NOT TAKE FRENCH 489 FOR CREDIT. FOR THE SAME COURSE  
NOT REQUIRING KNOWLEDGE OF FRENCH, SEE FRENCH 266.  
3 LECT HRS  
STAFF  
3 CREDITS
- FRENCH 490 SPECIAL TOPICS  
STUDY OF SPECIAL TOPICS VARYING EACH SEMESTER  
ACCORDING TO INSTRUCTOR  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
STAFF  
3 CREDITS
- FRENCH 498 HONORS THESIS IN FRENCH  
499 INDEPENDENT AND ORIGINAL  
SUPERVISION OF A FACULTY ADVISOR, AN ORAL DEFENSE OF THE THESIS  
BEFORE MEMBERS OF THE FRENCH DEPARTMENT IS REQUIRED.  
PREREQUISITE: DEPARTMENTAL PERMISSION  
HRS BY ARRANGEMENT  
STAFF  
3 CREDITS
- FRENCH 586 CURRICULUM AND METHODS STUDENTS TEACHING - FRENCH  
THE ISSUES, PRINCIPLES AND METHODS OF SECONDARY SCHOOL FRENCH  
LANGUAGE TEACHING. SUPERVISION AND CRITIQUE OF PRACTICE TEACHING.  
PREREQUISITE: 6 HOURS EDUCATION COURSES AND ADMISSION TO THE  
TEACHER CERTIFICATION PROGRAM.  
3 LECT HRS, 20 LAB HRS (PRACTICE TEACHING)  
STAFF  
9 CREDITS
- FRENCH XXX DICTION II
- DRILL IN PRONUNCIATION AND PRACTICE OF DICTION, WITH EMPHASIS ON  
ACQUISITION AND PERFECTING OF STANDARD FRENCH PRONUNCIATION AND  
AND INTONATION. BASED ON TEXTS STUDIED IN ANY ONE OF THE ADVANCED  
LITERATURE COURSES OFFERED BY THE FRENCH DEPARTMENT. DICTION II MAY  
BE TAKEN IN CONJUNCTION WITH ANY OF THE MAJOR COURSES IN FRENCH  
LITERATURE AFTER CONSULTATION AND BY ARRANGEMENT WITH THE INSTRUCTOR.  
IF THE INSTRUCTOR OF ANY GIVEN LITERATURE COURSE DOES NOT CHOOSE  
HIMSELF TO TEACH DICTION II IN CONJUNCTION WITH HIS COURSE, THE  
OPTION WILL STILL BE OPEN TO STUDENTS IF THEY CAN MAKE ARRANGEMENTS  
WITH ANOTHER MEMBER OF THE FRENCH FACULTY FOR HIM TO TAKE ON THE  
RESPONSIBILITY OF THE DICTION COMPONENT OF THE COURSE.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
2 DRILL HRS  
STAFF  
1 CREDIT
- GERMAN  
Graduation Requirements  
A major in German consists of four main emphases:  
1. A solid grounding in basic language skills as prerequisite to upper level  
work (Ger 201, 202, 205 and 206).  
2. Intensive work on the upper level in small seminar groups which are con-  
ducted entirely in German and which stress reading comprehension and com-  
position.  
3. Weekly tutorial meetings in small groups of 3-5 for sophomores, juniors  
and seniors. Focus is on oral discussion



4. Exposure to a broad range of German literature and culture in courses offered in English translation. A substantial portion of the readings in these courses must be done in German. Discussion in English.

Specifically, German majors are required, except where exceptions by the department are granted, to take the following courses, usually in the sequence listed:

- I. Lower level prerequisites
  - A. Ger 201 (intermediate German for reading comprehension) and 205 (Audio-lingual intermediate German) taken simultaneously in sophomore year.
  - B. Ger 202 and 206 taken simultaneously following completion of 201, 205.

11. Upper level requirements
 

|                                                           |                |
|-----------------------------------------------------------|----------------|
| Ger 220, 221 (sophomore tutorials)                        | 1 credit each  |
| Ger 320, 321 (junior tutorials)                           | 2 credits each |
| Ger 390, 391 (junior seminars)                            | 3 credits each |
| Ger 420 (senior tutorials)                                | 2 credits each |
| Ger 490 (senior seminar)                                  | 3 credits each |
| Four additional literature courses in English translation | 3 credits each |

In addition Ht 227 and 228 or Ger 250, 251 are required.  
Note: Ger 250, 251 may not be used for both literature and history requirements.

3 credits each

Total upper level credits required 29 + 6

#### Departmental Honors

For graduation with honors in German, students must have a 3.0 cumulative average at the end of their senior year. They must petition by the midterm of their penultimate semester to the department to be allowed to write an honors paper in independent study. Honors will be awarded on the basis of 1) their over-all performance in their major courses and 2) on their work in independent study.

- |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| GERMAN 101 | ELEMENTARY GERMAN FOR STUDENTS WITH NO CREDITABLE TRAINING IN GERMAN. WORK IN THE FOUR LANGUAGE SKILLS WITH PARTICULAR EMPHASIS ON LISTENING AND READING COMPREHENSION.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 4 CREDITS |
|            | 4 LECT HRS, 2 LAB HRS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |
|            | STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |
| GERMAN 102 | ELEMENTARY GERMAN CONTINUATION OF GERMAN 101. WORK IN THE FOUR LANGUAGE SKILLS WITH PARTICULAR EMPHASIS ON LISTENING AND READING COMPREHENSION.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 4 CREDITS |
|            | 4 LECT HRS, 2 LAB HRS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |
|            | STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |
| GERMAN 103 | ELEMENTARY GERMAN FOR READING AND CULTURE I THE FIRST SEMESTER OF A ONE-YEAR COURSE DESIGNED TO INTRODUCE THE STUDENT TO GERMAN CULTURE THROUGH THE STUDY OF THE GERMAN LANGUAGE. USING TEXTS RELATED TO GERMAN HISTORY, POLITICS, CONTEMPORARY SCIENCE, ART AND LIFE. THE STUDENT WILL DEVELOP AN ELEMENTARY READING KNOWLEDGE OF GERMAN, AS WELL AS A FAMILIARITY WITH THE CULTURE WHICH IT EXPRESSES. THIS COURSE IS ALSO A PREPARATION FOR THE COMPLEMENT TO LITERATURE IN TRANSLATION COURSES OFFERED BY THE DEPARTMENT. GERMAN WILL BE TAUGHT NOT FOR ACTIVE REPRODUCTION, BUT FOR A PASSIVE MASTERY. TO BE DEMONSTRATED BY READING COMPREHENSION. | 4 CREDITS |
|            | 4 LECT HRS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |
|            | STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |
| GERMAN 104 | ELEMENTARY GERMAN FOR READING AND CULTURE II THE SECOND SEMESTER OF A ONE-YEAR COURSE DESIGNED TO INTRODUCE THE STUDENT TO GERMAN CULTURE THROUGH THE STUDY OF THE GERMAN LANGUAGE USING TEXTS RELATED TO GERMAN HISTORY, POLITICS, CONTEMPORARY SCIENCE, ART AND LIFE. THE STUDENT WILL DEVELOP AN ELEMENTARY READING KNOWLEDGE OF GERMAN, AS WELL AS A FAMILIARITY WITH THE CULTURE WHICH IT EXPRESSES. THIS COURSE IS ALSO A PREPARATION FOR THE COMPLEMENT                                                                                                                                                                                           | 1 CREDIT  |

TO LITERATURE IN TRANSLATION COURSES OFFERED BY THE DEPARTMENT. GERMAN WILL BE TAUGHT NOT FOR ACTIVE REPRODUCTION, BUT FOR A PASSIVE MASTERY. TO BE DEMONSTRATED BY READING COMPREHENSION.

4 LECT HRS

STAFF

GERMAN 115  
INTENSIVE GERMAN A MULTI-MEDIA APPROACH, WITH CONCENTRATION ON LISTENING AND READING COMPREHENSION. OPEN TO STUDENTS WITH NO PREVIOUS CREDITABLE KNOWLEDGE IN GERMAN. GOOD ABILITY FOR LEARNING FOREIGN LANGUAGE IS ESSENTIAL. UPON COMPLETION, STUDENTS MAY ENTER GERMAN 201 AND, IN SPECIAL INSTANCES, 202.

PREREQUISITE: PERMISSION OF INSTRUCTOR

8 LECT HRS, 3 LAB HRS

MS. HORSLEY, MR. OTT

4 CREDITS

GERMAN 201  
INTERMEDIATE GERMAN FOR READING I  
202  
INTENSIVE GRAMMAR REVIEW AND INTENSIVE READING AND VOCABULARY BUILDING. READING IN THE FIELDS OF HUMANITIES, NATURAL AND SOCIAL SCIENCES.

PREREQUISITE: GERMAN 102 OR EQUIVALENT

4 LECT HRS

STAFF

4 CREDITS

GERMAN 205  
AUDIO-LINGUAL INTERMEDIATE GERMAN DESIGNED FOR STUDENTS WHO WANT MORE THAN A READING KNOWLEDGE OF BUILDING, CONSIDERABLE ATTENTION WILL BE GIVEN TO THE ORAL SKILLS. STRONGLY RECOMMENDED FOR ANY STUDENTS THINKING OF MAJORING IN GERMAN AND FOR THOSE WHO WISH A MORE COMPLETE COMMAND OF THE LANGUAGE.

4 LECT HRS

STAFF

4 CREDITS

GERMAN 206  
AUDIO-LINGUAL INTERMEDIATE GERMAN A CONTINUATION OF GERMAN 205. DESIGNED FOR STUDENTS WHO WANT MORE THAN A READING KNOWLEDGE OF GERMAN. IN ADDITION TO A THOROUGH GRAMMAR REVIEW AND NEW VOCABULARY BUILDING, CONSIDERABLE ATTENTION WILL BE GIVEN TO THE ORAL SKILLS. STRONGLY RECOMMENDED FOR ANY STUDENTS THINKING OF MAJORING IN GERMAN AND FOR THOSE WHO WISH A MORE COMPLETE COMMAND OF THE LANGUAGE.

4 LECT HRS

STAFF

4 CREDITS

GERMAN 215  
INTENSIVE INTERMEDIATE GERMAN DEVELOPMENT OF READING ABILITY AND VOCABULARY WHILE CONTINUING THE ORAL AND WRITING SKILLS DEVELOPED IN GERMAN 115 OR ELSEWHERE. OPPORTUNITY IS GIVEN TO FULFILL THE SECOND-YEAR LANGUAGE REQUIREMENT BY EXAM ON COMPLETION OF THE COURSE.

4 LECT HRS

STAFF

4 CREDITS

GERMAN 220  
SOPHOMORE TUTORIAL  
221  
INTRODUCTION TO READING LITERARY WORKS IN GERMAN. PRACTICE IN CAREFUL READING OF GERMAN TEXTS WITH SOME ATTENTION TO METHODS OF LITERARY ANALYSIS. DISCUSSIONS IN GERMAN.

1 LECT HRS

STAFF

1 CREDITS

GERMAN 230  
WRITING WORKSHOP DESIGNED TO HELP STUDENTS DEVELOP WRITING SKILLS WITHIN THE CONTEXT OF A COURSE ORIENTED TO AND THE STUDY OF GERMAN LITERATURE. IT WILL BE OFFERED IN TRANSLATION. ALTHOUGH ALTERNATE COPIES OF THE TEXT IN GERMAN WILL BE MADE AVAILABLE FOR THOSE STUDENTS WHO ARE ABLE TO READ THEM IN THE ORIGINAL. STUDENTS WILL EXAMINE THREE GERMAN NOVELS AND WRITE THREE 3-PAGE PAPERS WHICH WILL BE ANALYZED BY BOTH THE INSTRUCTOR AND BY THE STUDENTS. THE COURSE WILL BE CONDUCTED ON A SEMINAR-STYLE BASIS, MEETING TWO HOURS WEEKLY FOR FIVE WEEKS. THE WORKSHOP WILL BE OFFERED TWICE EACH SEMESTER. (CHECK WITH THE DEPARTMENT FOR DATES.) NO KNOWLEDGE OF GERMAN REQUIRED.

PREREQUISITE: PERMISSION OF INSTRUCTOR.

5 SEMINAR SESSIONS

MS. SHUMAN

1 CREDIT

- GERMAN 244 GERMANIC MYTHOLOGY  
NORSE AND TEUTONIC  
SOUTHERN GERMANIC POEMS, THE ICELANDIC SAGA, THE NATURE OF MYTH,  
AND ITS SURVIVAL IN POST-PAGAN TIMES. CONDUCTED IN ENGLISH. 4 CREDITS  
3 LECT HRS  
MR. OTT
- GERMAN 245 THE GERMAN CINEMA  
TRACES THE DEVELOPMENT OF THE GERMAN CINEMA FROM ITS BEGINNINGS TO  
THE PRESENT. DIRECTORS SUCH AS LANG, MURNAU, VON STERNBERG, AND ALEX-  
ANDER KLUGE ARE REPRESENTED. COURSE EMPHASIZES BOTH THE AESTHETIC  
AND THE SOCIAL NATURE OF FILM AS A MODERN ART FORM AND AS  
A GERMAN ART FORM IN PARTICULAR.  
3 LECT HRS, 3 LAB HRS 4 CREDITS  
STAFF
- NOT OFFERED IN 1976-77-----
- GERMAN 250 GERMAN CULTURE AND CIVILIZATION  
EXPRESSIONS OF GERMAN LIFE AND THOUGHT IN LITERATURE, PHILOSOPHY  
AND THEOLOGY, IN THE VISUAL ARTS, AND IN MUSIC. BROAD ASPECTS OF  
CULTURAL DEVELOPMENTS, SUCH AS THE RISE OF INDIVIDUALISM, WILL BE  
DISCUSSED IN THEIR EUROPEAN CONTEXT, WHEREAS SPECIFIC DEVELOPMENTS,  
SUCH AS MUSICAL TECHNIQUES FROM BACH AND BEETHOVEN, WILL BE  
CONSIDERED IN THEIR MORE SPECIFICALLY GERMAN TRADITION, WHENEVER  
POSSIBLE. GERMAN AND EUROPEAN CULTURAL HERITAGES WILL BE VIEWED IN  
THEIR INTERRELATION, AS FOR EXAMPLE, THE COURTY PERIOD OF THE 12TH  
CENTURY. READINGS WILL RANGE FROM THE 12TH CENTURY GERMANIC EPIC  
THE SONG OF THE NIBELUNGS TO LUTHER'S WRITINGS TO GOETHE'S FAUST.  
THERE WILL BE A NUMBER OF SESSIONS DEVOTED TO THE MUSICAL AND VISUAL  
ARTS. IN ENGLISH.  
3 LECT HRS 4 CREDITS  
MR. SPATHLING MR. DHORITY
- GERMAN 251 GERMAN CIVILIZATION FROM ROMANTICISM TO WW I  
FOCUS WILL BE ON ROMANTICISM, THE RISE OF GERMAN NATIONALISM, AND THE  
REVOLUTIONARY TRENDS OF THE PERIOD. AMONG THE AUTHORS READ WILL BE  
NOVALIS, RUCHNER, HEINE, MARX, NIETZSCHE, RILKE, MANN, FREUD, HESSE.  
MUSIC AND THE VISUAL ARTS WILL ALSO BE DISCUSSED.  
3 LECT HRS 4 CREDITS  
MR. DHORITY
- GERMAN 252 MARXIST APPROACHES TO GERMAN LITERATURE  
THIS COURSE WILL APPROACH FAMILIAR WORKS OF GERMAN LITERATURE FROM A  
MARXIST PERSPECTIVE, REPRESENTED PRIMARILY BY THE MARXIST CRITIC  
GEORG LUKACS. READINGS WILL INCLUDE GOETHE, NINETEENTH CENTURY  
REALISTS, THOMAS MANN AND BERT BRECHT  
3 LECT HRS 4 CREDITS  
STAFF
- GERMAN 253 GOETHE AND HIS AGE  
REPRESENTATIVE WORKS OF GERMAN STORM AND STRESS, CLASSICISM  
AND EARLY ROMANTICISM, INCLUDES GOETHE, SCHILLER, HOLDERLIN,  
NOVALIS, KLEIST. CONDUCTED IN ENGLISH.  
3 LECT HRS 4 CREDITS  
MR. DHORITY, MR. HOELZEL
- GERMAN 255 FAUST--ORIGIN, LEGEND AND THE LITERARY TRADITION.  
THE FAUSTIAN TRADITION THE HISTORICAL PERSON, THE LEGEND AND ITS CUL-  
TURAL IMPLICATIONS AND A FOUR-CENTURY LITERARY TRADITION. WORKS WILL  
INCLUDE THE FAUSTS OF MARLOWE, GOETHE AND MANN, CONDUCTED IN ENGLISH.  
3 LECT HRS 4 CREDITS  
MR. HOELZEL
- GERMAN 260 ASPECTS OF MODERN GERMAN LITERATURE  
SELECTED MASTERPIECES OF MODERN GERMAN LITERATURE INCLUDING MANN,  
HESSE, KAFKA AND BRECHT. CONDUCTED IN ENGLISH.  
3 LECT HRS 4 CREDITS  
STAFF
- GERMAN 261 THE CRISIS OF MORAL RELATIVISM IN MODERN GERMAN LITERATURE  
THREE ATTEMPTED SOLUTIONS WILL BE EXPLORED: THE AESTHETIC (T. MANN  
S. GEORGE) THE SOCIAL METAPHYSICAL (HESSE, RILKE, KAFKA) THE  
SOCIAL (KAISER, TOLLER, BRECHT. CONDUCTED IN ENGLISH.)  
3 LECT HRS 4 CREDITS  
MR. HOELZEL
- GERMAN 262 NIETZSCHE AND THE GERMAN ARTS  
AS REVEALED IN HIS WORKS AND THE WORKS OF OTHER ARTISTS FROM 1870-  
1950. CONDUCTED IN ENGLISH 4 CREDITS  
3 LECT HRS  
MR. DHORITY
- NOT OFFERED IN 1976-77-----
- GERMAN 263 GERMANY IN THE 20TH CENTURY - WEIMAR AND NAZI CULTURE  
A SURVEY OF THE CULTURAL AND CREATIVE TRENDS OF THE WEIMAR AND  
NAZI PERIODS, WITH AN EXAMINATION OF THEIR ROOTS IN ROMANTICISM,  
FOLKISH AUTHORS AND THE YOUTH MOVEMENT. FOCUS ON SUCH EXPONENTS AS  
THOMAS AND HEINRICH MANN, THE EXPRESSIONISTS, WELTRUMME, THE RAUHAUS  
GROUP, AND ROSENBERG'S NAZI CULTURE. CONDUCTED IN ENGLISH.  
3 LECT HRS 4 CREDITS  
MR. OTT
- GERMAN 264 BRECHT AND THE MODERN THEATER  
BRECHT'S EMERGENCE AS A SIGNIFICANT FORCE IN THE MODERN THEATER, AN  
EXAMINATION OF HIS MAJOR PLAYS AND THEORY OF THE EPIC THEATER WITH  
SELECTED READINGS OF CONTEMPORARY EUROPEAN AND AFRICAN DRAMATISTS,  
CONDUCTED IN ENGLISH.  
3 LECT HRS 4 CREDITS  
MR. HOELZEL
- GERMAN 265 HESSE, MANN AND THE MODERN ROMANTIC IMAGINATION  
MAJOR WORKS OF HESSE AND MANN IN THE CONTEXT OF BOTH HISTORICAL AND  
CONTEMPORARY ROMANTICISM. CONDUCTED IN ENGLISH.  
3 LECT HRS 4 CREDITS  
MR. DHORITY
- NOT OFFERED IN 1976-77-----
- GERMAN 266 EAST VERSUS WEST IN CONTEMPORARY GERMAN LITERATURE  
THE EMERGENCE OF THE TWO GERMANYS AS REFLECTED IN THE WORKS OF GRASS,  
WEISS, UWE JOHNSON, BRECHT AND OTHER REPRESENTATIVE WRITERS. CONDUCTED  
IN ENGLISH.  
3 LECT HRS 4 CREDITS  
STAFF
- GERMAN 267 JUNG AND HESSE  
KEY WORKS OF BOTH AUTHORS WILL BE READ IN ORDER TO EXPLORE THE  
QUESTIONS OF MUTUAL INFLUENCES, SIMILARITIES AND DIFFERENCES. PARTI-  
CULAR EMPHASIS WILL BE PLACED ON THE AUTHORS' COMPLEMENTARY IMPACT  
ON THE HUMANISTIC CONCERNS OF OUR DAY.  
3 LECT HRS 4 CREDITS  
MR. DHORITY
- GERMAN 268 GERMAN THEATRE  
THE TRADITION OF THE GERMAN THEATRE FROM THE MIDDLE AGES TO THE  
PRESENT. AMONG THE PLAYWRIGHTS READ WILL BE LESSING, GOETHE,  
SCHILLER, KLEIST, RUCHNER, MAUPHANT, HOFMANNSTAL, BRECHT. COURSE  
WILL ALSO INCLUDE INFORMAL CLASSROOM PERFORMANCES OF SOME OF THE  
DRAMATIC MATERIAL.  
3 LECT HRS 4 CREDITS  
MR. HOELZEL
- GERMAN 269 PILKE  
THE COURSE WILL EXPLORE AS FULL RANGE OF THIS GREATEST OF GERMAN  
POETS AS TRANSLATION WILL PERMIT. THE PIVOTAL NOVEL, THE NOTEBOOKS  
OF MALTE LAURIDS BRIGGE, AND A GENEROUS SELECTION FROM PILKE'S  
CORRESPONDENCE DEALING PARTICULARLY WITH THE INFLUENCE OF ROBIN AND  
CEZANNE AS WELL AS THE FAMOUS LETTERS TO A YOUNG POET WILL OCCUPY A  
CONSIDERABLE PORTION OF THE COURSE. THE POETRY STUDIED WILL INCLUDE  
DUTINO ELEGIES AND SONNETS TO ORPHEUS. READINGS AND DISCUSSIONS IN  
ENGLISH.  
3 LECT HRS 4 CREDITS  
STAFF
- GERMAN 270 LITERATURE SURROUNDING THE NAZI GENOCIDE OF 6 MILLION JEWS  
AN ANALYSIS OF PRIMARILY THE IMAGINATIVE LITERATURE WRITTEN ABOUT  
JEWISH SUFFERING UNDER THE NAZIS. THE COURSE WILL BEGIN WITH  
A BRIEF HISTORY OF THE HOLOCAUST. GUEST LECTURES AS WELL AS AT  
LEAST ONE INTERVIEW WITH A SURVIVOR.  
3 LECT HRS 4 CREDITS  
MR. HOELZEL



- GERMAN 271 MODERN AUSTRIAN LITERATURE  
THE AUSTRIAN LITERARY TRADITION FROM THE LAST DECADES OF THE AUSTRO-HUNGARIAN EMPIRE TO THE PRESENT, AS DISTINGUISHED FROM THE GERMAN DISCUSSION OF TYPICAL THEMES AND THEIR TREATMENT IN WORKS OF SCHNITZLER, HOFMANNSTHAL, KAFKA, RILKE, HANKE, MUSIL, AND OTHER CONTEMPORARIES. READINGS IN ENGLISH TRANSLATION. NO KNOWLEDGE OF GERMAN REQUIRED.  
3 LECT HRS  
MR. BOELSCHEVY  
3 CREDITS
- GERMAN 272 AUSTRIA, 1890-1934: LITERATURE AND CULTURE  
THE AUSTRIAN CULTURAL AND LITERARY TRADITION FROM THE LAST TWO DECADES OF THE AUSTRO-HUNGARIAN EMPIRE TO THE END OF THE FIRST REPUBLIC (1934). EXAMINATION OF THE INTELLECTUAL LIFE IN ITS SOCIAL & POLITICAL CONTEXT. WORKS OF FREUD, MACH, WITTGENSTEIN, SCHNITZLER, HOFMANNSTHAL, MUSIL, HANKE, KLIMT, AND OTHER CONTEMPORARIES WILL BE DISCUSSED. COURSE WILL MEET GERMAN MAJOR REQUIREMENTS.  
3 LECT HRS  
MR. GROSSMANN, MR. BOELSCHEVY  
3 CREDITS
- GERMAN 273 PROTEST AND REVOLT IN GERMAN LITERATURE  
SELECTED ANALYSIS OF WORKS IN GERMAN LITERATURE SINCE GOETHE DEALING WITH THEMES OF PROTEST AGAINST ESTABLISHED AUTHORITY RANGING FROM INDIVIDUAL INSURRECTION TO POLITICAL REVOLUTION.  
3 LECT HRS  
MR. HOFZEL  
4 CREDITS
- GERMAN 274 DREAMS AND VISIONS IN GERMAN LITERATURE  
A LITERATURE IN TRANSLATION COURSE FOCUSING ON WORK IN WHICH A DREAM AND/OR VISION FIGURES PROMINENTLY. A WIDE VARIETY OF LITERARY SELECTIONS FROM VARIOUS PERIODS AND GENRES INCLUDING ALSO READINGS FROM C.G. JUNG. DREAMS WILL BE EXAMINED BOTH AS A UNIVERSAL AND PARTICULARIZED MANIFESTATION OF THE CREATIVE UNCONSCIOUS WHICH SEEKS TO TRANSMIT MULTI-LEVELLED MESSAGES TO THE DREAMER, THEIR ROLE AS PART OF THE CREATIVE PROCESS ITSELF AND THEN AS PART OF THE WORK OF ART WILL BE ANALYZED. THE COURSE WILL INVESTIGATE TO WHAT EXTENT DREAMS CAN PRECIPITATE A WORK OF ART AND/OR TO WHAT EXTENT AND PURPOSE THEY ARE INTERWOVEN INTO THE FABRIC OF THE LITERARY PIECE.  
3 LECT HRS  
MS. SHUMAN  
4 CREDITS
- GERMAN 275 IMAGES OF MEN AND WOMEN IN GERMAN LITERATURE  
THE COURSE WILL INVESTIGATE CHANGING ROLES AND ATTITUDES TOWARD, AND MYTHS ABOUT THE SEXES AS REFLECTED IN GERMAN LITERATURE FROM THE MIDDLE AGES TO THE PRESENT. READINGS IN ENGLISH. NO KNOWLEDGE OF GERMAN REQUIRED.  
3 LECT HRS  
MS. HODSLEY  
4 CREDITS
- GERMAN 280 SPECIAL TOPICS IN GERMAN LITERARY AND CULTURAL HISTORY  
ANNOUNCED TOPICS WHICH WILL GENERALLY FOCUS ON A PARTICULAR AUTHOR, WORK OR HISTORICAL MOMENT.  
3 LECT HRS  
STAFF  
4 CREDITS
- GERMAN 320 JUNIOR TUTORIAL I  
EACH SEMESTER WILL FOCUS ON REPRESENTATIVE WORKS OF ONE GENRE-SUCH AS THE NOVELLA, LYRIC OR DRAMA - WITH THE PURPOSE OF EXPOSING STUDENTS TO THE THEORY AND EXAMPLES OF THE GENRE IN AN HISTORICAL CONTEXT.  
PREREQUISITE: GERMAN 220, 221 OR PERMISSION OF INSTRUCTOR  
1 LECT HRS  
STAFF  
2 CREDITS
- GERMAN 321 JUNIOR TUTORIAL II  
EACH SEMESTER WILL FOCUS ON REPRESENTATIVE WORKS OF ONE GENRE-SUCH AS THE NOVELLA, LYRIC OR DRAMA - WITH THE PURPOSE OF EXPOSING STUDENTS TO THE THEORY AND EXAMPLES OF THE GENRE IN A HISTORICAL CONTEXT. HEADINGS AND DISCUSSIONS IN GERMAN.  
PREREQUISITE: GERMAN 220, 221 OR PERMISSION OF INSTRUCTOR  
1 LECT HRS  
STAFF  
2 CREDITS
- GERMAN 340 JUNIOR SEMINAR I  
INTENSIVE TRAINING IN GERMAN COMPOSITION. COMBINATION OF GROUP SESSIONS AND CONFERENCES. FREQUENT SHORT ESSAYS. ALL DISCUSSION IN GERMAN.  
PREREQUISITE: TWO YEARS OF GERMAN OR EQUIVALENT  
3 SEM HRS  
STAFF  
3 CREDITS
- GERMAN 341 JUNIOR SEMINAR II  
INTENSIVE TRAINING IN GERMAN COMPOSITION. COMBINATION OF GROUP SESSIONS AND INDIVIDUAL CONFERENCES. FREQUENT SHORT ESSAYS. ALL DISCUSSION IN GERMAN.  
PREREQUISITE: TWO YEARS OF GERMAN OR EQUIVALENT  
3 SEM HRS  
STAFF  
3 CREDITS
- GERMAN 420 SENIOR TUTORIAL  
WORKS SELECTED ON A SPECIAL TOPIC OF INTEREST TO STUDENTS AND INSTRUCTORS. E.G. A THEME, SINGLE AUTHOR, PERIOD OR APPROACH. READINGS AND DISCUSSIONS IN GERMAN.  
PREREQUISITE: GERMAN 320, 321 OR PERMISSION OF INSTRUCTOR  
1 LECT HR  
STAFF  
2 CREDITS
- GERMAN 425 GOETHE AND PRE-ROMANTICISM  
MAJOR WORKS OF GOETHE AND SCHILLER WITH BACKGROUND HEADINGS IN THE GERMAN ENLIGHTENMENT. STORM, STRESS AND GERMAN CLASSICISM.  
PREREQUISITE: GERMAN 350  
3 LECT HRS  
MR. MOELZEL  
3 CREDITS
- GERMAN 427 GOETHE'S POETRY  
A STUDY OF THE RANGE AND STYLE OF GOETHE'S POETRY FROM THE EARLY TO THE LATE YEARS. READINGS AND DISCUSSIONS IN GERMAN.  
PREREQUISITE: GOOD READING AND LISTENING COMPREHENSION OF GERMAN  
3 LECT HRS  
MR. DORRITY  
3 CREDITS
- GERMAN 431 RILKE IN GERMAN  
A STUDY OF RILKE'S MAJOR WORKS, INCLUDING DAS STUNDENBUCH, NEUE GEDICHTE, OUTRISER ELEGIE, SONETTEN AN ORPHEUS, MALTE AND SELECTED LETTERS. READINGS AND DISCUSSIONS IN GERMAN.  
3 LECT HRS  
STAFF  
3 CREDITS
- GERMAN 435 GERMAN ROMANTICISM  
THE MAJOR PHASES OF THE GERMAN ROMANTIC MOVEMENT.  
PREREQUISITE: GERMAN 350  
3 LECT HRS  
STAFF  
3 CREDITS
- GERMAN 440 GERMAN DRAMA FROM LESSING TO THE PRESENT  
SELECTED MAJOR GERMAN DRAMAS FROM THE 18TH CENTURY TO THE PRESENT.  
PREREQUISITE: GERMAN 350  
3 LECT HRS  
MR. BOELSCHEVY  
3 CREDITS
- GERMAN 445 THE GERMAN NOVELLE  
THE DEVELOPMENT OF THE GERMAN NOVELLE FROM THE 19TH CENTURY TO THE PRESENT.  
PREREQUISITE: GERMAN 350  
3 LECT HRS  
STAFF  
3 CREDITS
- GERMAN 446 GERMAN LYRIC POETRY  
THE DEVELOPMENT OF THE GERMAN LYRIC FROM ITS BEGINNING TO THE PRESENT  
PREREQUISITE: GERMAN 350  
3 LECT HRS  
STAFF  
3 CREDITS
- GERMAN 455 NATURALISM, NEO-ROMANTICISM, AND EXPRESSIONISM  
GERMAN LITERATURE OF THE LEFT, THE RIGHT, AND THE PACIFIST MOVEMENT FROM 1890 TO 1914. READINGS FROM SUCH REPRESENTATIVE WRITERS AS HAUPTMANN, GEORGE, RILKE, HOFMANNSTHAL, WEDKIND AND THE EARLY BRECHT.  
PREREQUISITE: GERMAN 220, 221 OR PERMISSION OF INSTRUCTOR  
1 LECT HRS  
STAFF  
2 CREDITS



- GERMAN 440 GERMAN LITERATURE AFTER WORLD WAR I  
3 LECT HRS 3 CREDITS  
STAFF  
MAJOR WORKS BY SUCH AUTHORS AS MANN, KAFKA, BRECHT, HESS, FRIEDRICH, DÜRRENMATT, GRASS, THEIR RELATION TO 20TH CENTURY INTELLECTUAL LIFE OF GERMANY AND THE WEST  
PREREQUISITE: GERMAN 340  
3 LECT HRS 3 CREDITS  
STAFF
- GERMAN 442 BRECHT  
HERBERT BRECHT IS THE MOST POPULAR PLAYWRIGHT OF THIS CENTURY. HE IS POLITICALLY ENGAGED, YET, AT THE SAME TIME AN ACCOMPLISHED POET. READING HIS WORKS IN THE ORIGINAL GERMAN RATHER THAN IN TRANSLATION WILL LEAD TO AN APPRECIATION OF HIS POETIC SKILL AND DICTION, AS WELL AS ILLUMINATE HIS CLEVER PLAYS WITH EVERY POSSIBLE SEMANTIC FACET OF WORD OR PHRASE. BRECHT'S BEST KNOWN PLAYS, POEMS, STORIES, -KALENDER-GESCHICHTEN- AND AN INTRODUCTION TO HIS THEORIES FOR THEATER, AND POETRY, WILL BE OFFERED DURING THE COURSE.  
OFFERED BILINGUALLY. COMPARATIVE READING OF ENGLISH AND GERMAN TEXTS.  
3 LECT HRS 3 CREDITS  
STAFF
- GERMAN 445 GERMAN POST-WAR PROSE FROM EAST AND WEST  
WORKS BY ROLL, GRASS, JOHNSON, RIEMER, LIND AND WOLF.  
PREREQUISITE: GERMAN 350  
3 LECT HRS 3 CREDITS  
STAFF
- GERMAN 478 INDEPENDENT STUDY  
SELECTED RESEARCH TOPICS ORGANIZED IN CONSULTATION WITH INDIVIDUAL STUDENTS.  
PREREQUISITE: PERMISSION OF INSTRUCTOR AND CHAIRPERSON OF THE DEPARTMENT  
HRS BY ARRANGEMENT  
STAFF 3 CREDITS
- GERMAN 479 INDEPENDENT STUDY  
SELECTED RESEARCH TOPICS ORGANIZED IN CONSULTATION WITH INDIVIDUAL STUDENT.  
PREREQUISITE: PERMISSION OF INSTRUCTOR AND CHAIRMAN OF THE DEPARTMENT  
HRS BY ARRANGEMENT  
STAFF 3 CREDITS
- GERMAN 480 SEMINAR--LESSING AND HIS TIME  
G.E. LESSING AS PLAYWRIGHT AND LITERARY CRITIC SEEN AGAINST THE INTELLECTUAL AND RELIGIOUS BACKGROUND OF HIS TIME.  
PREREQUISITE: GERMAN 350  
3 LECT HRS 3 CREDITS  
MR. SPATLING
- GERMAN 490 SENIOR SEMINAR  
THE PURPOSE OF THE SENIOR SEMINAR IS THAT OF INTEGRATION. HERE THE MAJOR STUDENT WILL HAVE THE OPPORTUNITY OF LEARNING HOW TO APPLY LITERARY ANALYSIS AND APPRECIATION ALL THE PERTINENT SKILLS ACQUIRED IN PREREQUISITE COURSES. AT THE SAME TIME, THIS SEMINAR WILL GUIDE THE STUDENT TOWARDS INDEPENDENCE, LEADING HIM/HER TO EITHER INDEPENDENT STUDY OR AN HONORS COURSE DURING HIS/HER LAST SEMESTER BEFORE GRADUATION.  
PREREQUISITE: GERMAN 391 JUNIOR SEMINAR II  
1.5 HR. 1.5 LECT HR  
STAFF 3 CREDITS
- GERMAN 586 METHODS AND PRACTICE TEACHING OF GERMAN IN SECONDARY SCHOOLS  
THE ISSUES AND PRINCIPLES OF THE LEARNING AND TEACHING OF SECONDARY SCHOOL GERMAN LANGUAGE AND CULTURE. SUPERVISION AND CRITIQUE OF PRACTICE TEACHING IN THE SCHOOLS.  
PREREQUISITE: 6 HOURS EDUCATION COURSE AND PERMISSION OF INSTRUCTOR AND ADMISSION TO THE TEACHER CERTIFICATION PROGRAM.  
3 LECT HRS. 20 HRS PRACTICE TEACHING  
STAFF 9 CREDITS

# GREEK

- GREEK 101 ELEMENTARY GREEK  
FUNDAMENTALS OF ANCIENT ATTIC GREEK; DESIGNED TO COMPLETE A STANDARD, BASIC TEXTBOOK WITH GREEK 102 FALL  
STAFF 4 CREDITS
- GREEK 102 ELEMENTARY GREEK  
CONTINUATION OF GREEK 101 SPRING  
STAFF 4 CREDITS
- GREEK 211 INTERMEDIATE GREEK  
REVIEW OF BASIC PRINCIPLES AND INTRODUCTORY READING OF A PROSE AUTHOR (PLATO, LYSIAS) FALL  
STAFF 4 CREDITS
- GREEK 222 HOMER  
INTRODUCTORY READING IN THE ILIAD OR ODYSSEY; CONTINUATION OF GREEK 211; CREDIT MAY BE APPLIED TOWARDS ANY DEPARTMENTAL MAJOR SPRING  
STAFF 4 CREDITS
- GREEK 301 ATTIC ORATORS  
SELECTED READINGS IN LYSIAS, DEMOSTHENES, AND OTHER MAJOR ORATORS OF 5TH AND 4TH CENTURIES; BACKGROUND AND SCHOLARSHIP  
STAFF 3 CREDITS
- GREEK 302 PLATO  
READINGS IN SELECTED DIALOGUES; BACKGROUND AND SCHOLARSHIP  
STAFF 3 CREDITS
- GREEK 303 AESCHYLUS  
READING OF SELECTED TRAGEDIES; BACKGROUND AND SCHOLARSHIP  
STAFF 3 CREDITS
- GREEK 304 SOPHOCLES  
AS ABOVE
- GREEK 305 EURIPIDES  
AS ABOVE
- GREEK 306 ARISTOPHANES  
READING OF SELECTED COMEDIES; BACKGROUND AND SCHOLARSHIP  
STAFF 3 CREDITS
- GREEK 307 HERODOTUS  
READING OF SELECTED BOOKS OF THE HISTORIES; BACKGROUND AND SCHOLARSHIP  
STAFF 3 CREDITS
- GREEK 308 THUCYDIDES  
AS ABOVE
- GREEK 309 LYRIC POETRY  
SELECTIONS FROM LYRIC AND ELEGIAC POETS; BACKGROUND AND SCHOLARSHIP  
STAFF 3 CREDITS
- GREEK 310 EPIC POETRY  
ADVANCED READING OF HOMER'S ILIAD AND/OR ODYSSEY; BACKGROUND AND SCHOLARSHIP. REQUIRED FOR DEPARTMENTAL MAJOR IN GREEK AND COMBINED MAJOR IN GREEK/LATIN  
STAFF 3 CREDITS

GREEK 311 PROSE COMPOSITION  
ADVANCED EXERCISES IN GREEK GRAMMAR, SYNTAX, AND  
VOCABULARY; COMPOSITION IN GREEK BASED ON ANCIENT  
MODELS. SUGGESTED FOR DEPARTMENTAL MAJORS  
STAFF

3 CREDITS

GREEK 478-  
479 INDEPENDENT STUDY  
STAFF

1-3 CREDITS

GREEK 490-  
491 HONORS  
STAFF

1-3 CREDITS

# HISPANIC COURSES

HISPAN 462 BILINGUAL EDUCATION  
HISTORY, PROBLEMS AND METHODS. A FRANK DISCUSSION WITH STUDENTS  
INTERESTED IN BILINGUAL EDUCATIONAL PROGRAM. THIS COURSE IS IN NO  
WAY TO BE REGARDED AS A SUBSTITUTE FOR THE TCP.  
3 LECT HRS  
STAFF 3 CREDITS

HISPAN 465 HISPANIC CULTURE IN THE USA  
A STUDY OF THE HISPANIC CONTRIBUTIONS TO THE USA. SPANISH, MEXICAN,  
ANTILLEAN.  
3 LECT HRS  
STAFF 3 CREDITS

HISPAN 467 THE CARIBBEAN  
HISTORY AND CULTURE OF THE CARIBBEAN WITH SPECIAL ATTENTION TO PUERTO  
RICO.  
3 LECT HRS  
STAFF 3 CREDITS

HISPAN 469 ANTILLEAN INTELLECTUAL HISTORY AND THOUGHT  
ANTILLEAN PROBLEMS VIEWED BY OUTSTANDING ESSAYIST OF THE REGION.  
3 LECT HRS  
STAFF 3 CREDITS

# HISTORY

## HISTORY COLLEGE I

### Graduation Requirements

Majors are required to take at least forty (40) semester hours in courses  
offered by the department of History. In fulfilling that requirement, each  
History major is required to take:

- Two semesters of introductory History (History 100-199)
- Two semesters of U.S. History (History 265-266)
- One semester of Research and Methods (History 480 or 481)
- One semester of Non-U.S. pre-Industrial History  
(not including introductory courses)
- Two semesters of Non-U.S. post-Industrial History, one of  
which must be European History (not including  
introductory courses)
- Twelve semester hours of elective History courses

At least one semester course in the major's program must be either Asian,  
African, or Latin American History; and at least one semester course must be  
in European History.

## HISTORY COLLEGE II

### Graduation Requirements

1. For classes of 1976 and beyond: History 111 and 112 in the freshman year.  
Note: For those students taking either Europe Since 1660 I or II, History  
128 or History 109 in place of History 112, they must in addition take  
History 111 or 6 credits (3 of which are already required) in European  
History prior to 1700.

2. History 265 and 266 (Survey of American History) in the sophomore year;

3. History 480 or 481 (Research & Methods Seminar) in the junior year;

4. Three hours (one course) of upperclass course work in European History  
of the ancient, medieval or early modern period, before 1700;

5. Six hours (two courses) of upperclass course work in European History  
since 1700;

6. Twelve hours (four courses) of other courses offered by the department  
beyond the introductory level.

# HONORS PROGRAM

The requirements for receiving a diploma with honors in History are:

1. Satisfactory completion of all University and departmental  
requirements for graduation;
2. A 3.0 cumulative average in all University courses, and a  
3.3 cumulative average in all History courses through the  
senior year;
3. Satisfactory completion of the senior honors paper.

Students who intend to graduate in June of their senior year may apply between  
mid-May of their junior year and mid-September of their senior year; those  
intending to graduate in January should apply between mid-December and mid-  
January of the preceding academic year.

Candidates whose eligibility is approved by the department shall be informed  
that they may try for honors by writing an honors paper. The honors committee  
shall name an individual reading committee made up of three readers to judge  
the paper. Approval of the paper by at least two of the three readers is  
necessary for acceptance. A student accepted into the honors program must  
enroll in a 3-credit reading course, History 479-Independent reading, under  
the direction of an advisor.

## HIST 103 EUROPE SINCE 1715

AN INTRODUCTION TO MODERN EUROPEAN HISTORY, COVERING THE  
PERIOD FROM 1715 TO PRESENT.

3 LECT HRS

MR. MCCARTHY

4 CREDITS

## HIST 105 ELEMENTARY HISTORICAL WRITING

PRINCIPLES OF HISTORICAL WRITING - RULES OF EVIDENCE, USE OF  
SOURCES, TECHNIQUES OF RESEARCH, RHETORIC, GRAMMAR, AND STYLE.  
SEVERAL PAPERS REQUIRED.  
PREREQUISITE: FRESHMAN ONLY

3 LECT HRS

STAFF

4 CREDITS

## HIST 107

IDEAS AND MORALITY IN THE WEST, 500 B.C. TO 1700 A.D.  
A SURVEY OF IDEAS IN THEIR HISTORICAL CONTEXTS. ANCIENT GREECE,  
17TH AND 18TH CENTURY EUROPE, AND THE BIRTH OF SCIENCE IN THE  
PERIOD AROUND 1600 WILL BE STRESSED.

3 LECT HRS

MS. WATKINS

4 CREDITS

## HIST 109

WORLD CIVILIZATION I  
PRE-INDUSTRIAL CIVILIZATIONS - SELECTED CIVILIZATIONS SUCH AS CHINA,  
INDIA, GREECE, ROME, THE CHRISTIAN WEST AND THEIR ECONOMIES,  
PHILSOPHICAL AND RELIGIOUS BELIEFS AND THEIR SOCIAL AND POLITICAL  
STRUCTURES, TRAINING IN ORAL AND WRITTEN EXPRESSION.

3 LECT HRS

MS. KINGSTON-MANN, MR. PROUTY

4 CREDITS

- HIST 110 WORLD CIVILIZATION II  
INDUSTRIAL CIVILIZATIONS - THE INDUSTRIAL AND SOCIAL REVOLUTIONS  
IN THE WEST AND THEIR IMPACT ON OTHER CIVILIZATIONS. TRAINING IN  
ORAL AND WRITTEN EXPRESSION.  
3 LECT HRS  
MS. KINGSTON-MANN, MR. PROUTY  
4 CREDITS
- HIST 111 WESTERN CIVILIZATION I  
THE HISTORICAL DEVELOPMENT OF EUROPEAN CIVILIZATION. IDEAS AND  
INSTITUTIONS TO 1789, INCLUDING AMERICA'S PLACE IN THE WESTERN  
WORLD. TRAINING IN ORAL AND WRITTEN EXPRESSION.  
3 LECT HRS  
MR. GARNON, MS. WATKINS  
4 CREDITS
- HIST 112 WESTERN CIVILIZATION II  
THE HISTORICAL DEVELOPMENT OF EUROPEAN CIVILIZATION. IDEAS AND  
INSTITUTIONS SINCE 1789, INCLUDING AMERICA'S PLACE IN THE WESTERN  
WORLD. TRAINING IN ORAL AND WRITTEN EXPRESSION.  
3 LECT HRS  
MR. GARNON, MS. WATKINS  
4 CREDITS
- HIST 113 MODERN WORLD HISTORY I  
THE HISTORY OF TRADITIONAL AND EARLY MODERN SOCIETIES, 1400-1800.  
INCLUDES AFRICA, CHINA, RUSSIA AND WESTERN EUROPE.  
3 LECT HRS  
MS. KINGSTON-MANN  
4 CREDITS
- HIST 114 MODERN WORLD HISTORY II  
HISTORY OF MODERN WESTERN INDUSTRIAL SOCIETIES AND THE NON-WESTERN  
WORLD, 1800 - PRESENT.  
3 LECT HRS  
MS. KINGSTON-MANN  
4 CREDITS
- HIST 115 EAST ASIAN CIVILIZATION I  
AN INTRODUCTION TO THE TRADITIONAL CIVILIZATIONS OF CHINA AND  
JAPAN FROM THE EARLIEST TIMES TO THE ARRIVAL OF THE WESTERN POWERS.  
TRAINING IN ORAL AND WRITTEN EXPRESSION.  
3 LECT HRS  
MR. HIX  
4 CREDITS
- HIST 116 EAST ASIAN CIVILIZATION II  
THE POLITICAL, SOCIAL, ECONOMIC AND INTELLECTUAL PROBLEMS RESULTING  
FROM THE WESTERN IMPACT ON CHINA AND JAPAN, AS WELL AS KOREA AND  
VIETNAM. TRAINING IN ORAL AND WRITTEN EXPRESSION.  
3 LECT HRS  
MR. HIX  
4 CREDITS
- HIST 117 INTRODUCTION TO AFRICAN CIVILIZATION I  
THE INTERNAL DYNAMICS OF PRE-COLONIAL AFRICAN SOCIETIES ARISING  
FROM THE RANTU MIGRATIONS, THE RISE AND FALL OF THE KINGDOMS OF  
GHANA, MALI AND SONGHAI, THE CITY-STATES OF KILBA AND ZANZIBAR, THE  
DEVELOPMENT OF THE SLAVE TRADE, AND THE INFLUENCE OF RELIGION ON  
TRIBAL SOCIETIES. TRAINING IN ORAL AND WRITTEN EXPRESSION.  
3 LECT HRS  
MR. AMJJI  
4 CREDITS
- HIST 118 INTRODUCTION TO AFRICAN CIVILIZATION II  
THE INTERACTION BETWEEN THE WEST AND AFRICA IN THE NINETEENTH AND  
TWENTIETH CENTURIES. THE AFRICAN RESPONSE TO EUROPEAN IMPERIALISM,  
SOCIAL AND ECONOMIC CHANGES UNDER COLONIALISM, THE DEVELOPMENT OF  
NATIONALISM AND THE STRUGGLE FOR INDEPENDENCE, AFRICA, AND AFRO-  
AMERICAN, AND PAN-AFRICANISM. TRAINING IN ORAL AND WRITTEN  
EXPRESSION.  
3 LECT HRS  
MR. AMJJI  
4 CREDITS
- HIST 119 SCIENCE AND TECHNOLOGY IN THE MODERN WORLD  
THE IMPORTANCE OF SCIENCE AND TECHNOLOGY TO THE EVOLUTION OF  
INDUSTRIAL SOCIETY IN THE WEST. THE RELATIONSHIPS BETWEEN SCIENTIFIC  
DISCOVERY AND TECHNOLOGICAL GROWTH, AND THE RELATION OF SCIENTIFIC  
AND TECHNOLOGICAL CHANGE TO EVOLVING SOCIAL FORMS AND TYPES OF  
ECONOMIC ORGANIZATION.  
3 LECT HRS  
MR. ROBINSON  
4 CREDITS
- HIST 123 REVOLUTIONS IN MODERN HISTORY I, II  
AN INTRODUCTION TO THE FRENCH, RUSSIAN AND CHINESE REVOLUTIONS.  
STRESSING MASS PARTICIPATION AND THE DEVELOPMENT OF REVOLUTIONARY  
SOCIALISM. TRAINING IN WRITTEN AND ORAL EXPRESSION.  
3 LECT HRS  
MS. GORDON, MR. HUNT  
4 CREDITS
- HIST 124 PROBLEMS IN MODERN EUROPEAN HISTORY I  
AN INTRODUCTION TO EUROPEAN HISTORY. A TOPICAL AND INTEGRATIVE  
APPROACH TO THE HISTORY OF EUROPE FROM THE FRENCH REVOLUTION TO 1490  
TRAINING IN ORAL AND WRITTEN EXPRESSION.  
3 LECT HRS  
MR. DI SCALA, MS. HOFFMAN, MR. MCCARTHY  
4 CREDITS
- HIST 125 PROBLEMS IN MODERN EUROPEAN HISTORY II  
AN INTRODUCTION TO EUROPEAN HISTORY. A TOPICAL AND INTEGRATIVE  
APPROACH TO THE HISTORY OF EUROPE FROM 1490 TO THE PRESENT. TRAINING  
IN ORAL AND WRITTEN EXPRESSION.  
3 LECT HRS  
MR. DI SCALA, MS. HOFFMAN, MR. MCCARTHY  
4 CREDITS
- HIST 126 NATIONALISM AND NATIONAL MOVEMENTS: THE IRISH, JEWS & ARABS  
THE FIRST HALF OF THIS COURSE WILL EXAMINE THE ROOTS AND TRACE THE  
DEVELOPMENTS OF NATIONALISM IN 19TH AND 20TH CENTURY EUROPE. THE  
SECOND HALF WILL CONCENTRATE ON THE IRISH, JEWISH AND ARAB NATIONAL  
MOVEMENTS. THROUGHOUT AN ATTEMPT WILL BE MADE TO PERCEIVE THE COMMON  
DENOMINATORS AMONG THESE THREE MOVEMENTS.  
3 LECT HRS  
MS. HOFFMAN  
4 CREDITS
- HIST 127 INTRODUCTION TO CLASSICAL ARCHEOLOGY  
OFFERED JOINTLY BY THE ART AND HISTORY DEPARTMENTS. A SURVEY OF THE  
ART, ARCHEOLOGY, AND HISTORY OF BRONZE AGE GREECE AND ASIA MINOR.  
INTRODUCTION TO THE METHODS AND AIMS OF ARCHEOLOGY AND TO THE  
GEOGRAPHICAL AND HISTORICAL BACKGROUND OF THE PERIOD. THE MAJOR  
AREA CULTURES - THE MINOAN CIVILIZATIONS, MYCENAEAN GREECE, TROY, AND  
THE HITTITE EMPIRE.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. FOSS, MR. HAMAGE  
3 CREDITS
- HIST 204 GREEK HISTORY  
A SURVEY OF THE ORIGIN, RISE AND DEVELOPMENT OF ANCIENT GREEK  
CIVILIZATION FROM THE ARRIVAL OF THE GREEKS IN EUROPE UNTIL THE  
DEATH OF ALEXANDER. EMPHASIS ON THE RISE OF THE GREEK CITY-STATE  
AND THE SPREAD OF GREEK CULTURE TO THE EAST.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. FOSS  
3 CREDITS
- HIST 209 ROMAN HISTORY  
THE ROMAN STATE FROM ITS ORIGINS UNTIL THE TRIUMPH OF CHRISTIANITY.  
REPUBLIC AND EMPIRE WILL RECEIVE EQUAL ATTENTION. CLOSELY RELATED  
TO HISTORY 204. THE TWO COURSES PROVIDE A CONTINUOUS HISTORY OF THE  
MEDITERRANEAN WORLD FROM ABOUT 700 B.C. TO 300 A.D.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. FOSS  
3 CREDITS
- HIST 210 EARLY MIDDLE AGES  
MEDIEVAL HISTORY FROM MARCUS AURELIUS TO APPROXIMATELY 1000 A.D.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. PERCY  
3 CREDITS
- HIST 211 LATER MIDDLE AGES  
MEDIEVAL HISTORY FROM 1000 A.D. TO THE ITALIAN RENAISSANCE.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. PERCY  
3 CREDITS
- HIST 212 AGE OF THE RENAISSANCE AND REFORMATION I, II  
213 MEN, IDEAS, AND INSTITUTIONS OF 14TH CENTURY THROUGH 16TH CENTURY



- EUROPE.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MS. WATKINS
- HIST 215 EIGHTEENTH CENTURY EUROPE--EUROPE IN THE AGE OF ENLIGHTENMENT  
THE MAIN CURRENTS OF EUROPEAN THOUGHT IN THEIR HISTORICAL SETTING.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. GROSSMANN
- HIST 216 AGE OF BAROQUE  
EUROPE IN THE SEVENTEENTH CENTURY - STUDY OF A PERIOD DURING WHICH,  
IN THE MOST OF RELIGIOUS AND POLITICAL STRUGGLES, A NEW WORLD ORDER  
EMERGES, AN AGE THAT WITNESSED A TRANSFORMATION FROM TRADITIONAL  
THINKING TO NEW SCIENTIFIC CATEGORIES AND A FLOWERING OF NEW EXPRES-  
SIONS IN THE ARTS.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. GROSSMANN
- HIST 217 EUROPE IN THE NINETEENTH CENTURY I  
A POLITICAL, SOCIAL AND CULTURAL HISTORY OF EUROPE FROM 1815 TO  
1871, INCLUDING THE HISTORY OF EACH MAJOR EUROPEAN NATION.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. POWERS
- HIST 218 EUROPE IN THE NINETEENTH CENTURY II  
A POLITICAL, SOCIAL AND CULTURAL HISTORY OF EUROPE FROM 1871 TO  
1914, INCLUDING THE HISTORY OF EACH MAJOR EUROPEAN NATION.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. POWERS
- HIST 219 EUROPE IN THE TWENTIETH CENTURY I  
POLITICAL, ECONOMIC, SOCIAL, AND INTELLECTUAL HISTORY OF EUROPE,  
WITH ATTENTION TO EXTRA-EUROPEAN INFLUENCES, FROM 1900 TO 1939.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. GAGNON, MR. JEFFERSON
- HIST 220 EUROPE IN THE TWENTIETH CENTURY II  
POLITICAL, ECONOMIC, SOCIAL, AND INTELLECTUAL HISTORY OF EUROPE,  
WITH ATTENTION TO EXTRA-EUROPEAN INFLUENCES, FROM 1939 TO THE  
PRESENT.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. GAGNON, MR. JEFFERSON
- HIST 221 MODERN ENGLAND  
AN INTRODUCTION TO ENGLISH HISTORY AFTER 1689, EMPHASIS ON THE  
POLITICAL CAUSES OF THE SIXTEENTH AND SEVENTEENTH CENTURIES.  
PREREQUISITE: INTRODUCTORY HISTORY OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. MCCABILL
- HIST 222 ENGLAND IN THE AGE OF REVOLUTION  
ENGLISH HISTORY SINCE 1689, WITH EMPHASIS ON THE TRANSFORMATION OF  
LIFE AND INSTITUTIONS IN THE EIGHTEENTH AND NINETEENTH CENTURIES.  
PREREQUISITE: INTRODUCTORY HISTORY OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
STAFF
- HIST 223 EARLY MODERN FRANCE: EVOLUTION OF THE ANCIENT REGIME  
SOCIAL, POLITICAL, AND INTELLECTUAL CURRENTS AND INSTITUTIONS IN  
FRANCE FROM THE RENAISSANCE TO THE END OF THE ANCIENT REGIME.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. SEGAL
- HIST 224 FRANCE, 1815 TO THE PRESENT  
THE DEVELOPMENT OF PARLIAMENTARY INSTITUTIONS AND CRISES IN THEIR  
SOCIAL, ECONOMIC AND INTELLECTUAL SETTINGS AND FRANCE'S ROLE IN THE  
WORLD.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. GAGNON

- HIST 225 RUSSIAN HISTORY I  
A SURVEY OF THE POLITICAL, ECONOMIC, SOCIAL AND INTELLECTUAL  
DEVELOPMENT OF RUSSIA, FROM KIEV TO THE EMANCIPATION OF THE SERFS  
IN 1861.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. SHATZ, MS. KINGSTON-MANN
- HIST 226 RUSSIAN HISTORY II  
A SURVEY OF THE POLITICAL, ECONOMIC, SOCIAL AND INTELLECTUAL  
DEVELOPMENT OF RUSSIA, FROM 1861 THROUGH THE SOVIET UNION IN THE  
SECOND WORLD WAR.  
3 LECT HRS  
MR. SHATZ, MS. KINGSTON-MANN
- HIST 227 GERMAN HISTORY TO 1815  
MEDIEVAL ORIGINS OF GERMANY, THE REFORMATION, THE RISE OF  
BRANDENBURG-PRUSSIA, THE GERMAN ENLIGHTENMENT, GERMANY AND THE  
FRENCH REVOLUTION.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. BOOKENDER
- HIST 228 GERMAN HISTORY SINCE 1815  
GERMAN LIBERALISM, NATIONALISM, CONSERVATISM IN NINETEENTH CENTURY,  
REVOLUTION OF 1848, UNIFICATION, WORLD WAR I, WEIMAR, AND THE NAZI  
PERIOD.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. BOOKENDER
- HIST 229 THE HISTORY OF ITALY, FROM THE RENAISSANCE TO 1870  
DEVELOPMENTS IN ITALY FROM THE END OF THE RENAISSANCE TO 1870, WITH  
EMPHASIS ON THE EIGHTEENTH CENTURY AND THE RISORGIMENTO.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. DI SCALA
- HIST 230 THE HISTORY OF ITALY, 1870 TO THE PRESENT  
ITALIAN HISTORY SINCE 1870, INCLUDING AN EXAMINATION OF GIOLITTIAN,  
FASCIST AND REPUBLICAN ITALY.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. DI SCALA
- HIST 231 IRISH HISTORY, 1649 TO 1923  
THE FORCES AND MOVEMENTS WHICH CONTRIBUTED TO THE DEVELOPMENT OF  
IRISH NATIONALISM AND THE ACHIEVEMENT OF NATIONAL INDEPENDENCE.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. MCCABILL
- HIST 232 SPAIN AND PORTUGAL SINCE 1469  
THIS COURSE WILL EXAMINE WHY SPAIN AND PORTUGAL PLAYED LEADING ROLES  
IN WORLD HISTORY UNTIL THE 17TH CENTURY AND THE REASONS FOR THEIR  
DECLINE, AS WELL AS COMPARING JERMAN ENLIGHTENED DESPOTISM,  
LIBERALISM AND CONSERVATISM, INDUSTRIALIZATION, FASCISM, AND  
NEOCOLONIALISM WITH THEIR COUNTERPARTS IN OTHER AREAS OF EUROPE AND  
THE WORLD.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
STAFF
- HIST 233 ENGLISH HISTORY, 1485 TO 1800  
THIS COURSE WILL DEAL WITH THE TRANSFORMATIONS WITHIN EARLY MODERN  
ENGLISH SOCIETY THAT CULMINATE IN THE HIERARCHICAL COMMUNITY OF THE  
EIGHTEENTH CENTURY AND THE EMERGENCE OF A STABLE POLITICAL ORDER  
REFLECTING THE BALANCE OF INTERESTS IN SOCIETY.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. MCCABILL

- HIST 234 ENGLISH HISTORY, 1750 TO THE PRESENT  
A GENERAL INTRODUCTION TO THE HISTORY OF MODERN ENGLAND.  
PREREQUISITE: INTRODUCTORY HISTORY  
3 LECT HRS  
MR. PROUTY  
3 CREDITS
- HIST 237 JEWISH HISTORY: ANTIQUITY TO THE EARLY MIDDLE AGES.  
POLITICAL, SOCIAL AND INTELLECTUAL DEVELOPMENT IN JEWISH SOCIETY FROM BIBLICAL ANTIQUITY TO THE EARLY CENTURIES OF THE CHRISTIAN ERA. ATTENTION TO THE INTERACTION WITH ANCIENT NEAR EASTERN, GREECO-ROMAN, AND CHRISTIAN SOCIETIES AND CULTURES.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. SEGAL  
3 CREDITS
- HIST 238 JEWISH HISTORY: FROM THE SPANISH EXPULSION TO MODERN STATEHOOD  
POLITICAL, SOCIAL AND INTELLECTUAL DEVELOPMENT IN JEWISH SOCIETY IN WESTERN AND EASTERN EUROPE AND THE NEAR EAST FROM THE LATE 15TH CENTURY TO THE CREATION OF ISRAEL IN 1948. ATTENTION TO JEWISH EXPERIENCE IN THE AGE OF ABSOLUTISM AND MERCANTILISM, MARRANOS AND MESSIANISM, POLISH JEWRY AND HASIDISM, ENLIGHTENMENT, EMANCIPATION AND 19TH CENTURY RESPONSES TO MODERNISM, JEWISH EXPERIENCE IN THE 20TH CENTURY.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. SEGAL  
3 CREDITS
- HIST 239 THE MIDDLE EAST, 622 TO 1517  
INTERACTION BETWEEN ISLAMIC SOCIETY AND THE WEST FROM THE RISE OF ISLAM IN 622 TO THE TURKISH CONQUEST OF EGYPT.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. AHMAD, MS. HOFFMAN  
3 CREDITS
- HIST 240 THE MIDDLE EAST, 1517 TO THE PRESENT  
THE MIDDLE EASTERN RESPONSE TO THE WEST IN THE AGE OF EUROPEAN EXPANSION AND DOMINATION.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. AHMAD, MS. HOFFMAN  
3 CREDITS
- HIST 241 FROM REBELLION TO INDEPENDENCE: INDIA SINCE 1857  
THIS COURSE IS INTENDED TO BE AN INTRODUCTION TO THE INDIAN SUBCONTINENT AS IT EMERGED FROM BRITISH RULE TO INDEPENDENCE. IT IS DESIGNED FOR STUDENTS WHO ARE INTERESTED IN THIS AREA AND THE THIRD WORLD, REGARDLESS OF THEIR MAJORS. THE FRAMEWORK OF THE COURSE IS HISTORICAL BUT IT ALSO DEALS WITH THE SOCIAL AND RELIGIOUS INSTITUTIONS SUCH AS THE CASTE SYSTEM, AS WELL AS ECONOMIC AND POLITICAL CHANGE IN A TRADITIONAL SOCIETY.  
3 LECT HRS  
MR. AHMAD  
3 CREDITS
- HIST 242 MODERNIZATION OF THE MIDDLE EAST AND JAPAN IN THE 19TH CENTURY  
THE TRANSFORMATION OF TRADITIONAL SOCIAL STRUCTURES IN NINETEENTH CENTURY JAPAN AND THE MIDDLE EAST. THIS COURSE IS DESIGNED TO INTRODUCE STUDENTS TO TWO WIDELY DIVERGENT TRADITIONAL CULTURES, GRAPPLING WITH THE COMMON PROBLEM OF AN AGGRESSIVE, INDUSTRIALIZING WEST. IT ANALYZES THE REASONS FOR SUCCESSFUL TRANSITION TO MODERN NATION-STATE STATUS IN THE CASE OF ONE -JAPAN- AND FOR FAILURE IN THE CASE OF THE OTHER -MIDDLE EAST-. THE COMPARATIVE APPROACH TO JAPANESE AND MIDDLE EASTERN HISTORICAL MATERIALS, WILL HOPEFULLY SENSITIZE STUDENTS TO DIFFERENT ORGANIZING CONCEPTS USED BY HISTORIANS IN PRESENTING THE HISTORIES OF NON-WESTERN PEOPLES. IT WILL ALSO MAKE THEM AWARE OF THE COMPLEX RELATIONSHIPS BETWEEN INTERNAL AND EXTERNAL FACTORS IN THE PROCESS OF SOCIAL CHANGE.  
3 LECT HRS  
MR. AHMAD, MR. BIX  
3 CREDITS
- HIST 243 PROBLEMS IN AFRICAN CIVILIZATION  
INTENSIVE STUDY OF THE INTERACTION BETWEEN ISLAM AS A SOCIO-POLITICAL AND SPIRITUAL PHENOMENON AND TRADITIONAL AFRICAN SOCIETIES. PROBLEM ORIENTED, RATHER THAN CHRONOLOGICAL, APPROACH. THE ORIGINS AND SPREAD OF ISLAM TO SUB-SAHARAN AFRICA, PATTERNS OF ISLAMIZATION, GROWTH OF CENTRALIZED POLITICAL INSTITUTIONS, THE ROLE
- HIST 244 HISTORY OF EAST AFRICA  
MODERNIZATION AND SOCIAL CHANGE IN KENYA, UGANDA AND TANZANIA. SUCH TOPICS AS THE PROTO-NATIONALIST MOVEMENTS OF THE NINETEENTH CENTURY, THE POLITICS OF SURVIVAL IN THE INTER-WAR PERIOD, THE PROBLEMS OF EUROPEAN AND INDIAN SETTLERS, THE DEVELOPMENT OF POLITICAL PARTIES AND LIBERATION MOVEMENTS, PARTICULARLY THE MAU MAU MOVEMENT, AFRICAN SOCIALISM, AND THE PROBLEMS OF ETHNICITY AND NATIONAL INTEGRATION.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. ANIJI  
3 CREDITS
- HIST 248 MODERN JAPAN  
A HISTORICAL SURVEY OF ECONOMIC, SOCIAL, POLITICAL AND CULTURAL DEVELOPMENTS IN JAPAN FROM 1800 TO THE PRESENT. SPECIAL CONSIDERATION OF ECONOMIC AND FOREIGN POLICY PROBLEMS.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. BIX  
3 CREDITS
- HIST 249 HISTORY OF CONTEMPORARY EAST ASIA  
CASE STUDIES OF JAPAN, KOREA, THE PHILIPPINES AND INDOCHINA SINCE WORLD WAR II. THE AMERICAN OCCUPATION OF JAPAN, THE FACTORS INVOLVED IN ITS RESURGENCE IN THE 50'S AND 60'S, THE COLONIAL HERITAGE IN KOREA, THE PHILIPPINES AND INDOCHINA AS BACKGROUND FOR THE STUDY OF WAR, REVOLUTION AND MODERNIZATION IN THESE AREAS.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. BIX  
3 CREDITS
- HIST 250 MODERN VIETNAM  
SOCIAL AND POLITICAL HISTORY OF VIETNAM WITHIN THE CONTEXT OF GREAT-POWER RIVALRIES.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. BIX  
3 CREDITS
- HIST 265 AMERICAN HISTORY I  
A SURVEY OF AMERICAN HISTORY FROM 1763 TO THE CIVIL WAR. THE EXPANSION AND CONSOLIDATION OF THE AMERICAN UNION, THE DEVELOPMENT OF NATIONAL AND INTERNATIONAL POLICIES AND THE CULTURAL AND ECONOMIC FORCES THAT SHAPED THEM.  
3 LECT HRS  
STAFF  
4 CREDITS
- HIST 266 AMERICAN HISTORY II  
A SURVEY OF AMERICAN HISTORY FROM THE CIVIL WAR TO THE PRESENT. EXPANSION AND CONSOLIDATION OF THE AMERICAN UNION, THE DEVELOPMENT OF NATIONAL AND INTERNATIONAL POLICIES AND THE CULTURAL AND ECONOMIC FORCES THAT SHAPED THEM.  
3 LECT HRS  
STAFF  
4 CREDITS
- HIST 270 AMERICAN COLONIAL HISTORY, THE EARLIEST SETTLEMENTS TO 1763  
THE ENGLISH BACKGROUND OF EMIGRATION AND SETTLEMENT. THE EVOLUTION OF IMPERIAL INSTITUTIONS, AMERICAN SOCIAL, ECONOMIC, AND RELIGIOUS DEVELOPMENT, EMPHASIS ON POLITICAL IDEAS, INSTITUTIONS AND BEHAVIOR IN THE 17TH AND 18TH CENTURIES.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MS. MAIER  
3 CREDITS
- HIST 271 AGE OF THE AMERICAN REVOLUTION, 1763 TO 1789  
THE DEVELOPMENT OF THE CONFLICT WITH BRITAIN, 1763-1776, THE REVOLUTIONARY WAR AND ITS EFFECTS, THE FORMING OF REPUBLICAN INSTITUTIONS FOR STATE AND FEDERAL GOVERNMENTS.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MS. MAIER  
3 CREDITS



- HIST 273 THE AGE OF JACKSON AND LINCOLN  
A SOCIAL, ECONOMIC, POLITICAL AND CULTURAL HISTORY OF THE UNITED STATES FROM 1815 TO 1861.  
PREREQUISITE: HISTORY 265 AND 266 OR JUNIOR STANDING  
3 LECT HRS  
MR. RUCHAMES  
3 CREDITS
- HIST 274 CIVIL WAR AND RECONSTRUCTION HISTORY  
CAUSES OF THE CIVIL WAR, ITS SOCIAL, POLITICAL, AND IDEOLOGICAL HISTORY, AND THE PROBLEMS AND RESULTS OF SOUTHERN RECONSTRUCTION.  
PREREQUISITE: HISTORY 265 AND 266 OR JUNIOR STANDING  
3 LECT HRS  
MR. RUCHAMES  
3 CREDITS
- HIST 276 THE UNITED STATES IN THE TWENTIETH CENTURY, 1900 TO 1937  
AMERICAN POLITICS AND CULTURE FROM THE PROGRESSIVE PERIOD THROUGH THE NEW DEAL.  
PREREQUISITE: HISTORY 266 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. BROWN  
3 CREDITS
- HIST 277 THE UNITED STATES IN THE TWENTIETH CENTURY, 1937 TO THE PRESENT  
AMERICAN POLITICS AND CULTURE FROM THE NEW DEAL TO THE PRESENT.  
PREREQUISITE: HISTORY 266 OR PERMISSION OF INSTRUCTOR.  
3 LECT HRS  
MR. BROWN  
3 CREDITS
- HIST 282 COLONIAL LATIN AMERICA  
THE IMPOSITION OF SPANISH AND PORTUGUESE INSTITUTIONS ON THE PRE-COLUMBIAN CIVILIZATIONS IN THE NEW WORLD, AND THE ECONOMIC, SOCIAL, RELIGIOUS, POLITICAL, AND CULTURAL INSTITUTIONS THAT DEVELOPED IN LATIN AMERICA. EMPHASIS ON THE DIFFERENCES AND SIMILARITIES BETWEEN COLONIAL LATIN AMERICA AND OTHER CONTEMPORARY AND LATER EMPIRES.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MS. SCHNEIDER  
THIS COURSE IS A PREREQUISITE FOR THE LATIN AMERICAN STUDIES CONCENTRATION.  
3 CREDITS
- HIST 283 LATIN AMERICA, INDEPENDENCE TO THE PRESENT  
THE HISTORIES OF MEXICO, ARGENTINA, BRAZIL AND CUBA SINCE 1800. EMPHASIS ON BRITISH AND AMERICAN ECONOMIC EXPANSION INTO THESE COUNTRIES DURING THE 19TH AND 20TH CENTURIES, AND THE RESULTING POLITICAL AND SOCIAL CONSEQUENCES.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MS. SCHNEIDER  
THIS COURSE IS A PREREQUISITE FOR THE LATIN AMERICAN STUDIES CONCENTRATION.  
3 CREDITS
- HIST 284 TOPICS IN AMERICAN RELIGIOUS HISTORY  
AMERICAN SPIRITUAL EXPERIENCE AND EXPRESSION FROM THE PURITAN BEGINNINGS TO THE PRESENT, INCLUDING SUCH TOPICS AS RELIGIOUS PLURALISM, THE RELATIONSHIP BETWEEN RELIGION AND SOCIAL REFORM, STYLES OF CONVERSION, THE DECLINE OF PIETY, AND THE IMPACT OF IMMIGRANTS AND RELIGION UPON THE PROTESTANT MAJORITY.  
PREREQUISITE: SOPHOMORE STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
STAFF  
3 CREDITS
- HIST 305 THE EXPANSION OF EUROPE 1400-1920  
THIS COURSE WILL TRACE THE PRECONDITIONS OF THE INTELLECTUAL GEOGRAPHIC AND COMMERCIAL EXPANSION OF EUROPE FROM THE 15TH TO THE 18TH CENTURIES. IT WILL REVIEW THE AGE OF DISCOVERY AND EXAMINE THE RELATION BETWEEN IDEOLOGY, TRADE, AND COLONIZATION, THE IMPACT OF NON-EUROPEAN CIVILIZATIONS UPON WESTERN EUROPE, AND THE RISE AND DECLINE OF THE MERCANTILE EMPIRES OF PORTUGAL, SPAIN, ENGLAND, AND THE NETHERLANDS.  
PREREQUISITE: INTRODUCTORY HISTORY  
3 LECT HRS  
MR. WYNJUIS  
3 CREDITS
- HIST 308 DIPLOMATIC HISTORY OF EUROPE, 1815 TO 1914.  
THE DIPLOMACY OF THE CONCEPT OF EUROPE, THE EASTERN QUESTION AND BISMARCK AND OF IMPERIALISM LEADING TO THE OUTBREAK OF WAR IN 1914.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. AHMAD  
3 CREDITS
- HIST 309 DIPLOMATIC HISTORY OF EUROPE, 1914 TO THE PRESENT.  
THE SYSTEM OF COLLECTIVE SECURITY SET UP AFTER WORLD WAR I, AND THE FAILURE OF THIS SYSTEM BEFORE THE SECOND WORLD WAR. DISCUSSION OF THE ORIGINS AND CONSEQUENCES OF THE COLD WAR.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. AHMAD  
3 CREDITS
- HIST 310 ECONOMIC HISTORY OF WESTERN EUROPE TO 1750  
A SURVEY EMPHASIZING THE INTERRELATIONSHIP OF ECONOMIC LIFE AND DEMOGRAPHIC, SOCIAL, POLITICAL, AND RELIGIOUS DEVELOPMENT. PARTICULAR EMPHASIS ON THE DEVELOPMENT OF CAPITALISM AND LAISSEZ-FAIRE.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
STAFF  
3 CREDITS
- HIST 311 THE ECONOMICS OF WESTERN EUROPE FROM 1750 TO THE PRESENT.  
THE ECONOMICS OF WESTERN EUROPE FROM 1750 TO THE PRESENT.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
STAFF  
3 CREDITS
- HIST 314 MAIN CURRENTS OF EUROPEAN THOUGHT IN THE SEVENTEENTH AND EIGHTEENTH CENTURY.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. POWERS  
3 CREDITS
- HIST 315 HISTORY OF EUROPEAN IDEAS II  
MAIN CURRENTS OF EUROPEAN THOUGHT IN THE NINETEENTH AND EARLY TWENTIETH CENTURY.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. POWERS  
3 CREDITS
- HIST 317 THE AMERICAN UNIVERSITY  
A REVIEW OF THE TRADITIONAL FUNCTION AND CHARACTER OF HIGHER EDUCATION IN AMERICAN SOCIETY, AND AN EXAMINATION OF RECENT FUNDAMENTAL CHANGES IN BOTH.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. POWERS  
3 CREDITS
- HIST 320 HISTORY OF AMERICAN FOREIGN POLICY, 1743 TO 1900  
SURVEY OF UNITED STATES FOREIGN POLICY AND RELATIONS WITH THE REST OF THE WORLD, FROM THE COLONIAL PERIOD TO THE END OF THE NINETEENTH CENTURY. EMPHASIS ON DOMESTIC SOURCES OF FOREIGN POLICY AND U.S. EXPANSIONISM.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. REMSBERG  
3 CREDITS
- HIST 321 HISTORY OF AFRICAN FOREIGN POLICY, THE TWENTIETH CENTURY  
SURVEY OF UNITED STATES FOREIGN POLICY AND DIPLOMATIC RELATIONS WITH OTHER POWERS FROM THE TURN OF THE CENTURY TO THE 1940S. EMPHASIS ON DOMESTIC SOURCES OF FOREIGN POLICIES AND ON GENERAL TOPICS SUCH AS WORLD WARS I AND II, COLD WAR DIPLOMACY, AND THE OERATE OVER AMERICA'S ROLE IN WORLD AFFAIRS.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. REMSBERG  
3 CREDITS
- HIST 322 HISTORY OF BOSTON  
A GENERAL SURVEY FROM 1630 TO THE PRESENT EMPHASIZING THE VARIETY OF PEOPLE WHO GAVE THIS SEAPORT ITS SPECIAL CHARACTER AND PROMINENCE IN AMERICAN HISTORY.



- 3 LECT HRS  
MR. PRINITY
- 324 AMERICAN SOCIAL HISTORY TO THE CIVIL WAR  
THE EMERGENCE OF SOCIAL INSTITUTIONS IN AMERICA FROM THE ESTABLISHMENT OF COLONIES TO THE MID-NINETEENTH CENTURY.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. FELDBERG
- 325 AMERICAN SOCIAL HISTORY FROM THE CIVIL WAR TO THE PRESENT  
THE AMERICAN DREAM AS IT WAS RELATED TO INSTITUTIONS AND ETHNIC GROUPS IN TWENTIETH CENTURY U.S.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. FELDBERG
- 326 HISTORY OF AMERICAN THOUGHT TO THE CIVIL WAR  
IDEAS IN AMERICA--RELIGIOUS, SCIENTIFIC, POLITICAL, SOCIAL AND ECONOMIC--FROM THE COLONIAL PERIOD TO THE CIVIL WAR.  
PREREQUISITE: HISTORY 265 AND 266 OR JUNIOR STANDING  
3 LECT HRS  
MR. HOLLER, MR. HENDERICK
- 327 HISTORY OF AMERICAN THOUGHT FROM THE CIVIL WAR TO THE PRESENT  
IDEAS IN AMERICA--RELIGIOUS, SCIENTIFIC, POLITICAL, SOCIAL AND ECONOMIC--FROM THE CIVIL WAR TO THE NEW DEAL.  
PREREQUISITE: HISTORY 265 AND 266 OR JUNIOR STANDING  
3 LECT HRS  
MR. HOLLER, MR. HENDERICK
- 328 BLACK HISTORY IN AMERICA I  
THE HISTORY OF BLACK PEOPLE IN AMERICA FROM AFRICAN ORIGINS THROUGH THE CONCLUSION OF RECONSTRUCTION IN 1877. THE DEVELOPMENT OF SLAVERY IN THE SOUTH AND LIFE IN THE CITIES OF THE NORTH, PARTICULARLY THROUGH ORIGINAL ACCOUNTS BY BLACK AMERICANS.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. STEIN
- 329 BLACK HISTORY IN AMERICA II  
THE EXPERIENCE OF BLACK AMERICANS FROM THE RISE OF JIM CROW AFTER 1877 THROUGH THE EMERGENCE OF THE BLACK CHALLENGE TO AMERICAN RACIAL VALUES AND INSTITUTIONS IN THE 1950S AND THE 1960S.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. STEIN
- 330 HISTORY OF WORKING PEOPLE IN AMERICA  
A HISTORY OF WORKING PEOPLE IN AMERICA FROM COLONIAL TIMES TO THE PRESENT, WITH SPECIAL EMPHASIS ON INDUSTRIALIZATION, ITS ECONOMIC AND SOCIAL IMPACT ON WORKERS, AND THE WAYS IN WHICH WORKING PEOPLE RESPONDED TO THOSE CHANGES.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. FAIRER
- 331 MEDIEVAL LAW  
THE PRINCIPLES UNDERLYING THE EVOLUTION OF LAW IN WESTERN EUROPE. EMPHASIS ON ENGLAND DURING THE MIDDLE AGES. SOME OF THE LEGAL CONCEPTS AND PRINCIPLES NECESSARY IN UNDERSTANDING MEDIEVAL HISTORY AND COMMON LAW. RECOMMENDED FOR LAW STUDENTS.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. DEACY
- 332 THE MEDIEVAL MIND  
THROUGH LITERATURE, PHILOSOPHICAL, AND RELIGIOUS MASTERPIECES FROM THE PERIOD. THIS INTERDISCIPLINARY SEMINAR DURES THE CULTURE WHICH CREATED THE MODERN WEST AND CONSIDERS THE DIFFERENCES BETWEEN ITS MODES OF THOUGHT AND MODERN VALUES AND OURS.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. DEACY
- 333 THE SOCIAL AND ECONOMIC TRANSFORMATION OF EUROPE  
EUROPE'S INDUSTRIAL REVOLUTION, FUNDAMENTAL SOCIAL CHANGES ASSOCIATED WITH INDUSTRIALIZATION (IN DEMOGRAPHIC REGIME, FAMILY STRUCTURE, SOCIAL STRATIFICATION, ETC.). CONSIDERATION OF MOVEMENTS OPPOSED TO MODERNIZATION.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
STAFF
- 334 SCIENCE AND TECHNOLOGY IN THE INDUSTRIAL REVOLUTION IN BRITAIN  
THE SOCIAL AND ECONOMIC EFFECTS OF SCIENCE AND TECHNOLOGY DURING THE INDUSTRIAL REVOLUTION, AND SOME OF THE CONSEQUENCES FOR EDUCATION. THE IMPLICATIONS FOR SOME OF BRITAIN'S LEADING INDUSTRIES OF THE CHANGEOVER TO STEAMPOWER AND TO NEW CHEMICAL PROCESSES. SPECIAL CASE STUDY OF THE IMPORTANT ENGINEERING FIRM, HOULTON AND WATT. NO SPECIAL KNOWLEDGE OF SCIENCE REQUIRED.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. ROBINSON
- 335 ARTISANS AND PEASANTS IN EARLY MODERN EUROPE  
AN ANALYSIS OF THE CONSCIOUSNESS, THE FAMILY AND COMMUNITY ORGANIZATION, AND THE POLITICAL ACTIVITY OF PEASANTS AND ARTISANS IN 17TH AND 18TH CENTURY EUROPE.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. HUNT
- 336 THE BRITISH EMPIRE, 1700 TO 1900  
AN HISTORICAL STUDY OF SELECTED TOPICS AND PROBLEMS IN THE ECONOMY, POLITY, AND IDEOLOGY OF THE EIGHTEENTH AND NINETEENTH CENTURY BRITISH EMPIRE AND A REVIEW OF THE BRITISH ROLE IN THE WORLD ECONOMY.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. BRINITY
- 337 BRITAIN IN THE TWENTIETH CENTURY  
A SURVEY OF POLITICAL AND SOCIAL CHANGE IN BRITAIN SINCE 1900.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
STAFF
- 338 THE FRENCH REVOLUTION  
HISTORY OF THE EFFORTS OF THE FRENCH PEOPLE TO OVERTHROW THE SOCIAL SYSTEM OF THE OLD REGIME AND TO REPLACE IT WITH ONE MORE SUITED TO THEIR NEEDS.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. HUNT
- 339 LITERATURE AND HISTORY - RUSSIA 1825-1917  
THIS COURSE WILL FOLLOW THE INTERACTION BETWEEN RUSSIAN LITERATURE AND RUSSIAN HISTORY BETWEEN 1825-1917.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. KINGSTON-MANN
- 340 CONTEMPORARY CURRENTS OF PROTEST IN THE SOVIET UNION  
AN EXAMINATION OF THE RISE OF CRITICISM OF OFFICIAL POLICIES SINCE THE DEATH OF STALIN IN 1953.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. SHATZ
- 341 HISTORY OF THE RUSSIAN INTELLIGENTSIA, EIGHTEENTH CENTURY TO THE PRESENT  
RISE AND DEVELOPMENT OF POLITICAL DISSENT IN RUSSIA, FROM THE ORIGINS OF THE INTELLIGENTSIA IN THE EIGHTEENTH CENTURY TO STALIN'S PURGES OF THE 1930'S.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. SHATZ

- HIST 367 THE RUSSIAN REVOLUTION, 1917  
THE ORIGINS AND DEVELOPMENT OF THE RUSSIAN REVOLUTION, WITH SPECIAL  
EMPHASIS ON THE DISRUPTIONS OF WAR, PROPAGANDA, AND CONSTITUTIONAL FREE-  
DOM THAT DIVIDED PRE-REVOLUTIONARY OPINIONS OF THE TSARIST REGIME  
IN 1917.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MS. KINGSTON-MANN 3 CREDITS
- HIST 368 HISTORY OF EUROPEAN LIBERALISM  
A STUDY OF THE EVOLUTION OF THE LIBERAL TRADITION IN EUROPEAN THOUGHT  
FROM THE 17TH TO THE 20TH CENTURY. EMPHASIS IS PLACED UPON VARIETIES  
OF LIBERALISM, THE DISTINCTIVENESS OF NATIONAL TRADITIONS, AND THE  
RELATIONSHIP OF LIBERALISM TO RIVAL IDEOLOGIES SUCH AS DEMOCRACY,  
SOCIALISM, AND CONSERVATISM.  
PREREQUISITE: INTRODUCTORY EUROPEAN HISTORY  
3 LECT HRS  
MR. MCCARTHY 3 CREDITS
- HIST 369 THE HANSEATIC MONARCHY, 1659 TO 1918  
CONSOLIDATION OF THE MULTI-NATIONAL HANSEATIC EMPIRE AND ITS PECULIAR  
SOCIAL, ECONOMIC, AND POLITICAL INSTITUTIONS. DECLINE OF THE AUSTRIAN  
IDEA UNDER THE IMPACT OF 19TH CENTURY TENSIONS, NATIONAL AWAKENING  
OF CZECHS, GERMANS, POLES, MAGYARS, SOUTH SLAVS, AND THE HISTORICAL,  
SOCIAL AND PSYCHOLOGICAL ROOTS OF NATIONALISM. ATTEMPTS AT REFORM  
AND CONCILIATION. ULTIMATE FAILURE OF THE MULTI-NATIONAL STATE.  
CULTURAL AND INTELLECTUAL ACHIEVEMENTS OF THE MONARCHY'S LAST TWO  
CENTURIES.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
STAFF 3 CREDITS
- HIST 364 VIENNA, 1800  
A FOCUS ON THE LIFE AND CAREER OF ADOLF HITLER AT THE TURN OF THE  
CENTURY, A TIME OF POLITICAL DISINTEGRATION, WHEN IT BECAME THE  
CENTER OF NEW PIONEERING, INTELLECTUAL, SCIENTIFIC, AND AESTHETIC  
ACTIVITIES.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. GROSSMANN 3 CREDITS
- HIST 365 HITLER, A MAN AND HIS TIMES  
A FOCUS ON THE LIFE AND CAREER OF ADOLF HITLER TO ELUCIDATE AN  
IMPORTANT PERIOD IN GERMAN AND EUROPEAN HISTORY.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. ROKKHJER 3 CREDITS
- HIST 366 MARX AND FREUD. STUDIES IN MODERN INTELLECTUAL HISTORY  
A COMPARISON OF THE APPROACHES OF MARX AND FREUD TO POLITICAL AND  
SOCIAL PROBLEMS. SOME ATTENTION WILL BE GIVEN TO THINKERS E.G.,  
HERBERT MARCHESE, WHO HAVE SOUGHT TO CORRELATE THE INSIGHTS OF MARX AND  
FREUD.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. MCCARTHY 3 CREDITS
- HIST 369 HISTORY OF EUROPEAN SOCIALISM  
A SURVEY OF SOCIALIST IDEAS AND MOVEMENTS FROM THE ERA OF THE FRENCH  
REVOLUTION TO THE PRESENT. EMPHASIS WILL BE PLACED ON THE READING  
OF MAJOR TEXTS IN THE SOCIALIST TRADITION.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MR. MCCARTHY 3 CREDITS
- HIST 360 A SOCIAL HISTORY OF WORKING CLASS WOMEN  
GENERAL SOCIAL HISTORY OF WOMEN AND THE INSTITUTIONS THAT GOVERNED  
THEIR LIVES--THE FAMILY, SEXUAL AND REPRODUCTIVE PRACTICES, CHILD-  
RAISING PRACTICES, THE SOCIAL ORGANIZATION OF WORK AND CONTROL OVER  
THE MEANS OF PRODUCTION.  
PREREQUISITE: INTRO HISTORY, A WOMEN'S STUDIES COURSE  
AND JUNIOR STANDING  
3 LECT HRS  
MS. GORDON 3 CREDITS

- HIST 362 HISTORY OF FEMINISM  
THE POLITICAL AND CULTURAL REVELLION OF WOMEN IN ENGLAND AND AMERICA  
FROM THE LATE 18TH CENTURY TO THE PRESENT, INCLUDING THE  
CONTEMPORARY WOMEN'S LIBERATION MOVEMENT, WOMEN'S RIGHTS MOVEMENTS,  
AND WOMEN'S PARTICIPATION IN THE LABOR MOVEMENT, THE SOCIALIST AND  
COMMUNIST MOVEMENTS, ABOLITIONIST STRUGGLE AND THE CIVIL RIGHTS  
MOVEMENT.  
PREREQUISITE: HISTORY 361  
3 LECT HRS  
MS. GORDON 3 CREDITS
- HIST 363 HITLER AND STALIN. COMPARATIVE DICTATORSHIP  
AN HISTORICAL COMPARISON OF GERMANY UNDER HITLER AND THE SOVIET  
UNION UNDER STALIN.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
3 LECT HRS  
MORRINGER 3 CREDITS
- HIST 364 HISTORY OF FEMINIST THOUGHT  
AN UPPER LEVEL SURVEY OF FEMINIST THEORY, EUROPEAN AND AMERICAN. IT  
WILL CONCENTRATE PRIMARILY ON THE DEVELOPMENT OF FEMINIST THOUGHT  
BETWEEN THE LATE EIGHTEENTH CENTURY AND THE PRESENT, READING SUCH  
THEORISTS AS WOLLSTONECRAFT, MILL, GILMAN, MARX, AND CONTEMPORARY  
WOMEN'S LIBERATION WRITERS.  
PREREQUISITE: INTRO HISTORY, A WOMEN'S STUDIES COURSE  
AND JUNIOR STANDING  
3 LECT HRS  
STAFF 3 CREDITS
- HIST 365 MODERNIZATION, NATIONALISM AND REVOLUTION IN THE MIDDLE EAST. I  
IMPACT OF THE WESTERN WORLD ON THE MIDDLE EAST AND THE MIDDLE  
EASTERN RESPONSE. ESPECIALLY THE LATTER, FROM 1798 TO 1914. COM-  
PARATIVE ANALYSIS OF THE DIFFERENT SOCIETIES OF THE AREA AND THEIR  
POLITICAL, ECONOMIC AND SOCIAL STRUCTURES.  
PREREQUISITE: AN INTRODUCTORY HISTORY COURSE (100-199). PREFERABLY  
111 OR 112  
3 LECT HRS  
MR. AHMAD 3 CREDITS
- HIST 366 MODERNIZATION, NATIONALISM AND REVOLUTION IN THE MIDDLE EAST. II  
IMPACT OF THE WESTERN WORLD ON THE MIDDLE EAST AND THE MIDDLE EAST-  
ERN RESPONSE. ESPECIALLY THE LATTER, FROM 1914 TO THE PRESENT. COM-  
PARATIVE ANALYSIS OF THE DIFFERENT SOCIETIES OF THE AREA AND THEIR  
POLITICAL, ECONOMIC AND SOCIAL STRUCTURES.  
PREREQUISITE: AN INTRODUCTORY HISTORY COURSE (100-199). PREFERABLY  
111 OR 112  
3 LECT HRS  
MR. AHMAD 3 CREDITS
- HIST 367 CHINESE HISTORY TO 1644  
A SURVEY OF TRADITIONAL CHINESE CIVILIZATION TO THE ESTABLISHMENT  
OF THE LAST CHINESE DYNASTIC EMPIRE IN 1644. MAJOR TOPICS INCLUDE  
THE BEGINNING OF CHINESE CIVILIZATION, MAJOR SCHOOLS OF THOUGHT IN  
ANCIENT CHINA -CONFUCIANISM, TAOSIM, LEGALISM- THE CREATION OF THE  
CHINESE EMPIRE, THE CONFUCIANIZATION OF CHINESE INSTITUTIONS, SOCIAL  
STRUCTURE AND MOBILITY, THE ROLE OF LAW, THE EVOLUTION OF CHINESE  
CULTURE, CHALLENGES TO THE CHINESE SYSTEM, AND CHINESE VIEWS OF  
WORLD ORDER.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
MS. CONNER 3 CREDITS
- HIST 368 CHINESE HISTORY SINCE 1644  
A SURVEY OF MODERN CHINESE HISTORY FROM THE FOUNDING OF THE LAST  
DYNASTIC EMPIRE IN 1644 TO THE PRESENT. MAJOR TOPICS INCLUDE THE  
RISE AND DECLINE OF THE MANCHU DYNASTY, THE COMING OF EUROPEANS,  
DOMESTIC REVELLION, CHINA'S RESPONSE TO THE WEST, FOREIGN  
ENCROACHMENT, THE UPSURGE OF NATIONALISM, REFORM AND REVOLUTION, THE  
CHINESE RENAISSANCE, THE NATIONALIST GOVERNMENT, CHINESE COMMUNISM,  
JAPAN'S AGGRESSION, THE CIVIL WAR, AND THE PEOPLE'S REPUBLIC OF  
CHINA.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
MS. CONNER 3 CREDITS



- HIST 371 THE GERMANIES 1945-1975  
THIS COURSE TRACES THE EMERGENCE OF TWO DISTINCT GERMAN STATES FROM A COMMON HERITAGE.  
GERMAN STATES FROM A COMMON HERITAGE.  
3 LECT HRS  
3 CREDITS
- HIST 373 PROGRESSIVISM AND THE EMERGENCES OF MODERN AMERICA 1890-1920  
AN ANALYSIS OF THE PERIOD IN WHICH THE UNITED STATES EMERGED AS A LEADING INDUSTRIAL AND EXPANSIONIST POWER. THE COURSE WILL COVER THE NATIONALIZATION OF INDUSTRY, THE GENESIS OF REFORM AND CHANGES IN TRADITIONAL VALUES AND BELIEFS.  
PREREQUISITE: HISTORY 265-266  
3 LECT HRS  
MR. STEIN  
3 CREDITS
- HIST 376 HISTORY OF AFRICA FROM 1870 TO THE PRESENT  
THE EUROPEAN CONQUEST AND PARTITION OF AFRICA, THE ESTABLISHMENT OF EUROPEAN RULE AND AFRICAN RESPONSE TO COLONIALISM, FORMS OF NATIVE ADMINISTRATIVE POLICIES, SOCIO-ECONOMIC CHANGES IN AFRICAN SOCIETIES, GROWTH OF AFRICAN NATIONALISM, THE EMERGENCE OF INDEPENDENT AFRICAN STATES AND PROBLEMS OF DECOLONIZATION.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL APPROVAL  
MR. AMIJI  
3 CREDITS
- HIST 380 HISTORY OF THE SOUTH, 1865 TO THE PRESENT  
THIS IS A SURVEY COURSE IN SOUTHERN HISTORY FROM THE CIVIL WAR TO THE PRESENT. THERE WILL BE SPECIAL EMPHASIS ON RECONSTRUCTION, THE NEW SOUTH MYTH, POPULISM, RACE RELATIONS, LABOR SYSTEMS, SOUTHERN POLITICIANS, AND RECENT CHANGES IN THE SOUTH.  
PREREQUISITE: JUNIOR STANDING OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. DANIELS  
3 CREDITS
- HIST 398 TOPICS IN THE HISTORY OF HUMANITY  
AN INTENSIVE STUDY OF SELECTED TOPICS IN THE HISTORY OF HUMANITY.  
PREREQUISITE: HISTORY 323 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. PROUTY  
3 CREDITS
- HIST 400 SPECIAL TOPICS  
INTENSIVE STUDY OF TOPICS IN HISTORY, COURSE CONTENT AND CREDIT WILL VARY EACH SEMESTER AND WILL BE ANNOUNCED DURING THE ADVANCE REGISTRATION PERIOD. FULFILLS HISTORICAL STUDIES CORE REQUIREMENT.  
HRS BY ARRGT  
STAFF  
1-4 CREDITS
- HIST 478 SPECIAL PROBLEMS I  
GUIDED READING AND RESEARCH, MAY BE USED IN DEPARTMENTAL HONORS PROGRAM.  
PREREQUISITE: SENIOR STANDING, HISTORY MAJOR  
HRS BY ARRANGEMENT  
STAFF  
3 CREDITS
- HIST 479 SPECIAL PROBLEMS II  
GUIDED READING AND RESEARCH, MAY BE USED IN DEPARTMENTAL HONORS PROGRAM.  
PREREQUISITE: SENIOR STANDING, HISTORY MAJOR  
HRS BY ARRANGEMENT  
STAFF  
3 CREDITS
- HIST 480 SEMINAR IN EUROPEAN HISTORY  
A PROBLEM COURSE INTENDED TO GIVE TRAINING IN HISTORICAL RESEARCH AND WRITING. THE FIELD OF EUROPEAN STUDY VARIES EACH SEMESTER.  
PREREQUISITE: COLLEGE 1 ONLY - JUNIOR STANDING OR DEPARTMENTAL PERMISSION  
COLLEGE 2 ONLY, JUNIOR AND SENIOR HISTORY MAJORS  
3 LECT HRS  
STAFF  
3 CREDITS
- HIST 481 SEMINAR IN AMERICAN HISTORY  
A PROBLEMS COURSE INTENDED TO GIVE TRAINING IN HISTORICAL RESEARCH AND WRITING. THE FIELD OF AMERICAN STUDY VARIES EACH SEMESTER.  
PREREQUISITE: COLLEGE 1 ONLY - JUNIOR STANDING OR DEPARTMENTAL PERMISSION  
COLLEGE 2 ONLY, JUNIOR AND SENIOR HISTORY MAJORS  
3 LECT HRS  
STAFF  
3 CREDITS
- HIST 482 SEMINAR IN LATIN-AMERICAN HISTORY  
A PROBLEM COURSE INTENDED TO GIVE TRAINING IN HISTORICAL RESEARCH AND WRITING. THE FIELD OF LATIN-AMERICAN STUDY VARIES EACH SEMESTER.  
PREREQUISITE: COLLEGE 1 ONLY - JUNIOR STANDING OR DEPARTMENTAL PERMISSION  
COLLEGE 2 ONLY, JUNIOR AND SENIOR HISTORY MAJORS  
3 LECT HRS  
MS. SCHNEIDER  
3 CREDITS
- HIST 590 FIELD PRACTICUM IN HISTORY  
THE PRACTICUM IS DESIGNED TO ENABLE A STUDENT TO EARN 15 HOURS CREDIT -SIX IN HIS MAJOR FIELD- FOR A SEMESTER OF WORK DURING THE ACADEMIC YEAR WITH A GOVERNMENT AGENCY. THE PROGRAM IS DESIGNED TO INTEGRATE THIS EXPERIENCE INTO A MORE GENERAL EDUCATION PLAN WHICH WILL REQUIRE MAJORS TO COMPLETE A MORE COURSE THAT IS SUBSTANTIALLY RELATED TO THE PROPOSED INTERNSHIP IN THE SEMESTER PRECEDING AND A SIMILARLY RELATED POST-COURSE IN THE SEMESTER FOLLOWING THE INTERNSHIP. SEE DEPT. FOR A SPECIFIC SAMPLE PROGRAM.  
PREREQUISITE: APPROVAL OF HISTORY DEPARTMENT  
HRS BY ARRANGEMENT  
STAFF  
9 CREDITS
- HUMANITIES
- HUMAN 114 MASTERPIECES IN WESTERN LITERATURE  
SELECTED WORKS IN VARIOUS GENRES AND FROM VARIOUS PERIODS BY SUCH MAJOR WRITERS AS HOMER, SOPHOCLES, DANTE, SHAKESPEARE, GOETHE, TOLSTOY, AND FAULKNER. SPECIAL ATTENTION TO WRITING.  
3 LECT HRS  
MR. GITTLEMAN, MR. NELSON, MS. HERSHTEL.  
4 CREDITS
- HUMAN 116 MASTERPIECES IN WESTERN LITERATURE I  
A STUDY OF THE MAJOR LITERARY WORKS FROM HOMER TO DANTE  
3 LECT HRS  
MR. BLUESTONE, MR. WILLEY  
4 CREDITS
- HUMAN 117 MASTERPIECES IN WESTERN LITERATURE II  
A STUDY OF MAJOR LITERARY WORKS FROM DANTE TO GOETHE  
3 LECT HRS  
MR. BLUESTONE  
4 CREDITS
- HUMAN 201 INTRODUCTION TO LINGUISTICS  
AN INTRODUCTION TO THE MODERN STUDY OF LANGUAGE VIEWED AS A CRUCIAL FACTOR IN UNDERSTANDING THE HUMAN MIND. IT WILL PROVIDE THE SCIENTIFIC TOOLS TO DESCRIBE LANGUAGE. RECOMMENDED FOR ALL LANGUAGE-RELATED SPECIALTIES AS WELL FOR GENERAL EDUCATION.  
3 LECT HRS  
MS. AMHROSE-GRILLET  
3 CREDITS
- HUMAN 202 RILINGUALISM  
THE STUDENT WILL INVESTIGATE THE POLITICAL, CULTURAL, SOCIOLOGICAL, EDUCATIONAL, AND LINGUISTIC IMPLICATIONS OF MULTILINGUALISM. THIS COURSE SHOULD BE PARTICULARLY RELEVANT FOR THOSE STUDENTS WHOSE CHILDHOOD LANGUAGE WAS NOT ENGLISH AND FOR THOSE WHO ARE LEARNING FOREIGN LANGUAGES OR GOING TO TEACH BILINGUAL CHILDREN.  
3 LECT HRS  
MS. AMHROSE-GRILLET  
3 CREDITS
- HUMAN 203 LANGUAGE ACROSS TIME  
HOW LANGUAGE AND LANGUAGE-CHANGE HAVE BEEN VIEWED ACROSS TIME: PROCESSES AND PATTERNS OF LINGUISTIC CHANGE, LINGUISTIC RECONSTRUCTION



|       |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |
|-------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| HUMAN | 249 | AFRICAN LITERATURE<br>AN INTRODUCTION TO CONTEMPORARY AFRICAN FICTION AND POETRY. WORKS BY SUCH WRITERS AS AMMAH, KOSITSILE, LAYE, ACHERF, AND OTHERS WILL BE EXAMINED IN THE CONTEXT OF THE SOCIAL AND POLITICAL BACKGROUND FROM WHICH THEY EMERGED, WITH PARTICULAR EMPHASIS ON THE SITUATION AND ROLE OF THE WRITER IN AFRICA TODAY.<br>PREREQUISITE: INTRODUCTORY COURSE (ENGLISH) ACCORDING TO COLLEGE<br>3 LECT HRS<br>MS. TRUESDELL, MS. HROWN (SHAWIAT)                             | 3 CREDITS |
| HUMAN | 254 | ROMANTICISM IN EUROPEAN LITERATURE<br>THE DEVELOPMENT OF ROMANTICISM IN EUROPE.<br>PREREQUISITE: INTRODUCTORY COURSE (ENGLISH) ACCORDING TO COLLEGE<br>3 LECT HRS<br>MR. OTT, MS. HERSHTEL                                                                                                                                                                                                                                                                                                  | 3 CREDITS |
| HUMAN | 260 | VISIONARY AND PROPHECIC MODES IN LITERATURE<br>VISIONARY AND PROPHECIC EXPERIENCE AS REFLECTED IN SELECTED WRITINGS FROM SUCH SOURCES AS THE BIBLE, BLAKE, HESSE, AND PRIMITIVE POETRY. THEORETICAL WORKS ABOUT NON-RATIONAL PERCEPTION, TAOIST READINGS AND THE I-CHING.<br>PREREQUISITE: PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MR. SCHREIBER, MS. MENDILLO                                                                                                                            | 3 CREDITS |
| HUMAN | 263 | PROUST, JOYCE AND MANN<br>VISION OF SELF, OF SOCIETY OF ART AND REALITY AS SEEN BY THREE MAJOR CONTRIBUTORS TO 20TH CENTURY MAN'S UNDERSTANDING OF HIMSELF. STUDIED IN COMPARATIVE CONTEXT.<br>3 LECT HRS<br>MR. FSKIN                                                                                                                                                                                                                                                                      | 3 CREDITS |
| HUMAN | 265 | THE FAUST TRADITION<br>A LECTURE COURSE EMPHASIZING CRITICAL INTERPRETATION OF MAJOR TEXTS IN THE FAUST TRADITION BY MARLOWE, GOETHE, I.A. RICHARDS, JOHN HERSEY, AND THOMAS MANN. ATTENTION GIVEN TO THE EVOLUTION OF THE LEGEND AND TO OTHER ADAPTATIONS OF FAUSTIAN MATERIAL.<br>PREREQUISITE: ENGLISH 101 ON PERMISSION OF INSTRUCTORS<br>3 LECT HRS<br>MR. BLUESTONE, MR. HOELZEL                                                                                                      | 4 CREDITS |
| HUMAN | 270 | ANDROSEXUALITY IN WESTERN LITERATURE<br>THE STUDY OF SELECTED WORKS OF WESTERN GAY LITERATURE AND DISCUSSION OF THEMES AND ISSUES SUGGESTED BY THESE WORKS. REPRESENTATIVE AUTHORS INCLUDE SARPHO, PLATO, WOLF, BARNES, SHAKESPEARE, GENET, MANN, FORSTER, AND MANY CONTEMPORARY FEMALE AND MALE WRITERS.<br>3 LECT HRS<br>MR. SCHREIBER                                                                                                                                                    | 3 CREDITS |
| HUMAN | 301 | COMPARATIVE HISTORY OF ROMANCE LANGUAGES<br>A COMPARATIVE STUDY OF THE EVOLUTION OF THE ROMANCE LANGUAGES FROM LATIN, WITH ANALYSIS OF THE MOST REPRESENTATIVE TEXTS FROM EACH PERIOD AND LANGUAGE. PARTICULAR EMPHASIS WILL BE PLACED UPON FRENCH, ITALIAN AND SPANISH. IN ENGLISH TRANSLATION.<br>3 LECT HRS<br>MR. GIUSTINIANI                                                                                                                                                           | 3 CREDITS |
| HUMAN | 310 | TRANSFORMATIONAL SYNTAX<br>THIS COURSE WILL TRAIN THE STUDENT IN USING THE PRINCIPLES AND METHODS DEVELOPED SINCE 1957 BY CHOMSKY AND HIS FOLLOWERS.<br>PREREQUISITE: HUMANITIES 201 OR 203 OR ANTHROPOLOGY 241 OR 245<br>3 LECT HRS<br>MS. AMROUSE-GRIFFET                                                                                                                                                                                                                                 | 3 CREDITS |
| HUMAN | 343 | MYTH AND LITERATURE<br>A STUDY OF MYTHS AND MYTHIC LITERATURE USING TECHNIQUES FROM SEVERAL DISCIPLINES TOWARD THE END OF UNDERSTANDING BOTH THE NATURE OF MYTH AND ITS RELATIONSHIP TO LITERATURE.<br>PREREQUISITE: SOPHOMORE STANDING ON PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MS. MENDILLO, MR. CROSSLEY                                                                                                                                                                             | 3 CREDITS |
| HUMAN | 344 | TRAGEDY<br>EXAMINATION OF THE ART AND MEANING OF TRAGEDIES.<br>PREREQUISITE: INTRODUCTORY (ENGLISH) COURSE ACCORDING TO COLLEGE<br>3 LECT HRS<br>MR. STOCK, MS. HERSHTEL                                                                                                                                                                                                                                                                                                                    | 3 CREDITS |
| HUMAN | 345 | FANTASY AND UTOPIA<br>A STUDY OF TYPES AND MOODS OF FANTASY IN LITERATURE, SUCH AS SCIENCE FICTION, UTOPIAN ROMANCE, FAIRY-TALE, SATIRIC VOYAGE, AND TALES OF THE PRETERNATURAL.<br>3 LECT HRS<br>PREREQUISITE: INTRODUCTORY (ENGLISH) COURSE ACCORDING TO COLLEGE<br>MS. WARREN, MR. CROSSLEY                                                                                                                                                                                              | 3 CREDITS |
| HUMAN | 347 | HEADINGS IN EUROPEAN FICTION<br>THE ART AND THOUGHT OF SUCH MAJOR EUROPEAN NOVELISTS AS DOSTOEVSKY, TOLSTOY, STENDHAL, GLOFF, MANN, AND KAFKA.<br>PREREQUISITE: INTRODUCTORY (ENGLISH) COURSE ACCORDING TO COLLEGE<br>3 LECT HRS<br>MR. STOCK, MS. HERSHTEL                                                                                                                                                                                                                                 | 3 CREDITS |
| HUMAN | 353 | ARTS OF LOVE IN MEDIEVAL LITERATURE<br>A STUDY OF THE COURTLY ETHOS AS REPRESENTED IN SUCH TEXTS AS TROUADOUR LYMICS, CHRETIEN'S ROMANCES, GOTTFRIED'S TRISTAN, DANTE'S VITA NUOVA, AND CHAUCER'S TROILUS AND CRISEYDE.<br>PREREQUISITE: INTRODUCTORY (ENGLISH) COURSE ACCORDING TO COLLEGE<br>3 LECT HRS<br>MS. MC ALPINE                                                                                                                                                                  | 3 CREDITS |
| HUMAN | 363 | THE IMAGE OF WOMEN IN LITERATURE<br>ARCHETYPES AND STEREOTYPES OF WOMEN IN WORKS BY SUCH WRITERS AS CHAUCER, SHAKESPEARE, FLAUBERT, HAWTHORNE, JAMES, IRSEN, CHECKHOV, HEMINGWAY, FAULKNER, MAILER AND LESSING.<br>PREREQUISITE: INTRODUCTORY (ENGLISH) COURSE ACCORDING TO COLLEGE<br>3 LECT HRS<br>MS. HUNT, MS. FERGUSON, MS. DITTMAR, MS. COLLINS                                                                                                                                       | 3 CREDITS |
| HUMAN | 390 | ANCIENT AND MEDIEVAL EPIC<br>A STUDY OF HEROIC LITERATURE IN RELATION TO ITS ROOTS IN MYTHOLOGICAL NARRATIVE. THE CONTINUITY OF THE TRADITION IS FOLLOWED IN READINGS FROM THE ANCIENT NEAR EAST, HOMERIC GREECE, AND MEDIEVAL IRELAND, SCANDINAVIA, ENGLAND, AND FRANCE.<br>PREREQUISITE: INTRODUCTORY (ENGLISH) COURSE ACCORDING TO COLLEGE<br>3 LECT HRS<br>MR. ROWEN                                                                                                                    | 3 CREDITS |
| HUMAN | 400 | COMPARATIVE LINGUISTICS<br>AN INTRODUCTION TO DIACHRONIC LINGUISTIC HISTORY OF LANGUAGES AND HISTORICAL GRAMMAR IN GENERAL. GROUPING OF GENETICALLY RELATED LANGUAGES AND COMPARISON OF THEM AS METHOD FOR THE RECONSTRUCTION OF OLDER PATTERNS OF EACH GROUP. EMPHASIS WILL BE PUT ON THE INDO EUROPEAN, GERMANIC AND ESPECIALLY ROMANCE LANGUAGE FAMILIES. THE COURSE WILL BE ADAPTED TO THE NEEDS AND LINGUISTIC BACKGROUND OF THE STUDENTS WHO ENROLL.<br>3 LECT HRS<br>MR. GIUSTINIANI | 3 CREDITS |

HUMAN 405 INNOCECE: THE QUEST FROM SOPHOCLES TO SAM BECKETT.  
COMBINING LITERARY ANALYSIS AND INTELLECTUAL HISTORY, THE  
COURSE WILL EXAMINE THE CONCEPTS OF INNOCENCE AND GUILT IN  
THE WESTERN ETHICAL TRADITION. READINGS FROM ANCIENT MYTH,  
THE BIBLE, SOPHOCLES, MILTON, BLAKE, DOSTOEVSKI, KAFKA,  
DYLAN, BECKETT, ET. AL.  
PREREQUISITE: INTRODUCTORY (ENGLISH) COURSE ACCORDING TO COLLEGE, OR  
PERMISSION OF THE INSTRUCTOR  
3 LECT HRS  
MS. WATKINS, MR. HELMS  
3 CREDITS

HUMAN 446 LITERATURE AND THE POLITICAL IMAGINATION  
AN INTENSIVE EXPLORATION OF THE LANGUAGE AND IMAGINATIVE FORMS  
THROUGH WHICH POLITICS FINDS EXPRESSION IN LITERATURE. SPECIAL  
ATTENTION WILL BE GIVEN TO THE PERSONAL VISIONS OF SPECIFIC WRITERS  
AS THEY RELATE TO SUCH MATTERS AS STYLE, TONE, IMAGERY, OR STRUCTURE.  
FICTION, DRAMA, AND POETRY WILL BE STUDIED, MOSTLY MODERN.  
THROUGH CLOSE TEXTUAL ANALYSIS WE WILL TRY TO FORMULATE  
CRITERIA FOR JUDGING THE USES AND MISUSES OF LANGUAGE AND  
LITERATURE PUT IN THE SERVICE OF POLITICS OR RESPONDING TO POLITICS.  
PREREQUISITE: INTRODUCTORY (ENGLISH) COURSE ACCORDING TO COLLEGE  
3 LECT HRS  
MS. DITTMAR  
3 CREDITS

# INTERDISCIPLINARY

INTR D 105 INDUSTRIAL SOCIETY - CONCEPTS AND CONCEPTUALIZATION IN THE  
SOCIAL SCIENCES  
AN INTRODUCTION TO THE CONCEPTS AND METHODS OF THE VARIOUS SOCIAL  
SCIENCES BY MEANS OF A PRE-DISCIPLINARY INVESTIGATION OF THE  
PHENOMENON OF INDUSTRIAL SOCIETY.  
6 LECT/DISC HRS  
MR. KIRSCH, MR. SIMONDS  
8 CREDITS

INTR D 110 GREAT ISSUES IN EAST ASIAN STUDIES  
GREAT ISSUES IN EAST ASIAN STUDIES WILL BE A BASIC INTRODUCTION TO  
THE NEW EAST ASIAN STUDIES PROGRAM NOW BEING FORMED AT COLLEGE I.  
THE COURSE WILL INVOLVE STAFF FROM EAST ASIAN STUDIES FACULTY IN AN  
INTERDISCIPLINARY OVERVIEW OF ASIAN CULTURE AND PROBLEMS OF ASIAN  
SOCIAL INSTITUTIONS, SPECIFICALLY, THE COURSE WILL CONSIDER ASIAN  
HISTORY, LITERATURE, PHILOSOPHY, POLITICS, LAW AND JUSTICE, EDUCATION  
CHILD-CARE, SOCIAL ORGANIZATIONS, AND WOMEN'S ROLE IN SOCIAL CHANGE.  
THE COURSE WILL NEITHER REQUIRE NOR ASSUME ANY PREVIOUS BACKGROUND  
IN ASIAN STUDIES AND IT WILL BE DIRECTED TO TEACH FUNDAMENTAL  
INFORMATION TO THE NON-SPECIALIST.  
3 LECT HRS  
MR. SWARTZ, MR. JEFFERSON, MR. CASE  
STAFF  
3 CREDITS

INTR D 125 SCIENCE FOR HUMANE SURVIVAL  
126 THAT ATTEMPTS TO ANSWER TWO MAIN QUESTIONS--HOW CAN LONG-TERM SUR-  
VIVAL OF THE HUMAN SPECIES IN HUMANE CONDITIONS BE ACHIEVED? HOW CAN  
INDIVIDUALS SURVIVE AS HEALTHY AND VIGOROUS HUMANE BEINGS IN CONTEM-  
PORARY INDUSTRIAL SOCIETY? TOPICS INCLUDE FOOD, ENERGY, POLLUTION,  
POPULATION, IDEOLOGY, SOCIAL ORGANIZATION, TRANSPORTATION, EXERCISE,  
CLOTHING, SHELTER, COMPETITION. ORGANIZED TOPICALLY AND WITHOUT  
PREREQUISITES, THE COURSE MAY BE ENTERED IN EITHER THE FALL OR THE  
SPRING SEMESTER, AND IS OPEN TO ALL STUDENTS. TWO LECTURES AND ONE  
DISCUSSION WEEKLY. A VARIETY OF WORKSHOPS ARE SPONSORED BY THE COURSE  
PARTICIPATION IN WHICH IS OPTIONAL, BUT ENCOURAGED. OFFERED ON A  
PASS-FAIL BASIS ONLY (NO LETTER GRADES). IT CARRIES 4 CREDITS PER  
SEMESTER AND SATISFIES THE SCIENCE REQUIREMENT FOR COLLEGE II  
STUDENTS. IT SATISFIES THE SCIENCE REQUIREMENT FOR COLLEGE I  
BY SCIENCE FACULTY MEMBERS.  
2 LECT HRS, 1 DISC HR  
MR. SALZMAN  
4 CREDITS

INTR D 130 LEARNING AND SCHOOLING  
THIS COURSE WILL STUDY SOME OF THE CHANGES IN SCHOOLS EXEMPLIFIED IN  
THE CREATION OF -FREE SCHOOLS- AND -OPEN CLASS ROOMS- IN AN ATTEMPT  
TO RAISE AND DISCUSS SOME BASIC QUESTIONS ABOUT SCHOOLS AND CHILDREN.  
THE TOPICS COVERED WILL BE FREEDOM AND CONTROL IN EDUCATION, SCHOOLS  
AND THE TRANSMISSION OF DOMINANT SOCIAL VALUES, HUMAN DEVELOPMENT  
AND CURRICULUM, AND LEARNING AND KNOWLEDGE. EMPHASIS IN THIS COURSE  
WILL BE PUT ON THE GOALS, METHODS, AND PROBLEMS OF BOTH TRADITIONAL  
PUBLIC SCHOOLS AND FREE SCHOOLS AS THEY ARE EXEMPLIFIED IN PRACTICE.  
CONSIDERATION WILL BE GIVEN TO OTHER ALTERNATIVES THAT HAVE BEEN  
ATTEMPTED TO TRADITIONAL SCHOOLING -LIKE THE HIGH-SCHOOL WITHOUT-  
WALLS-, AS WELL AS TO QUESTIONS ABOUT COMMUNITY CONTROL OF SCHOOLS  
AND THE DESCHOOLING THEORY. THIS COURSE WILL NOT ONLY BE TAUGHT  
THROUGH LECTURE AND GROUP DISCUSSIONS, BUT ALSO THROUGH THE USE OF  
FILMS AND, WHERE POSSIBLE, VISITS TO FREE SCHOOLS AND OPEN CLASSROOMS.  
6 LECT-DISC HRS  
STAFF  
4 CREDITS

INTR D 530 INTERNSHIPS IN LEARNING AND SCHOOLING  
STUDENT INTERNSHIPS IN COURSES LEARNING AND SCHOOLING.  
PREREQUISITE: SELECTIONS BY INSTRUCTORS  
MR. SWARTZ, MR. JEFFERSON, MR. CASE  
STAFF

## ITALIAN

### Graduation Requirements

Majors are required to take a minimum of 30 credits in junior-senior level  
courses in Italian, including Italian 301-302 (or its equivalent). All  
majors must have taken Italian 311 (or its equivalent) as prerequisite for  
advanced literature courses.

At the end of the senior year, majors are encouraged to take a comprehensive  
oral and written examination in Italian, both as an academic experience  
summing up their Italian studies and as qualification for the University and  
departmental awards in Italian. The examination would cover three specific  
fields of Italian literature (to be chosen by the student from among: 1. Il  
Duecento E Il Trecento; 2. Umanesimo E Rinascimento; 3. Il Seicento E Il  
Settecento; 4. Romanticismo E Risorgimento; 5. Il Novecento) But the student  
would be expected to have some knowledge of the course and direction of  
Italian literature in general. Students who wish to take the examination  
should consult the academic advisor at the beginning of the Spring semester  
of the senior year.

### DEPARTMENTAL HONORS

To graduate with honors, a student must; 1. Achieve a 3.5 average in his  
Italian studies; 2. Submit to the Italian department a short research paper  
written during the second semester of his senior year under the supervision of  
the departmental advisor; 3. Take the comprehensive examination; 4. Be re-  
commended by the departmental honors committee; 5. Attain a 3.0 overall grade  
average.

The student may elect to discuss his honors paper in an open departmental  
meeting instead of taking the oral part of the comprehensive examination.

The department grants 6 credits towards the total 30 major credits for  
successful completion of the honors program.

101 ELEMENTARY ITALIAN I  
FOR STUDENTS WHO HAVE NO CREDITABLE TRAINING IN ITALIAN.  
INTENSIVE PRACTICE IN THE FOUR LANGUAGE SKILLS. WITH AN  
AUDIO-LINGUAL APPROACH.  
4 LECT HRS. 2 LAB HRS  
STAFF  
4 CREDITS



- ITAL 102 ELEMENTARY ITALIAN II  
THE CONTINUATION OF ITAL 101. INTENSIVE PRACTICE IN THE FOUR  
LANGUAGE SKILLS, WITH AN AUDIO-LINGUAL APPROACH.  
PREREQUISITE: ITALIAN 101 OR EQUIVALENT  
4 LECT HRS, 2 LAB HRS  
STAFF 4 CREDITS
- ITAL 201 INTERMEDIATE ITALIAN I  
AN INTENSIVE REVIEW OF GRAMMAR AND FURTHER STUDY OF AUDIO-LINGUAL  
SKILLS WITH CORRELATED READINGS IN ITALIAN CULTURE.  
PREREQUISITE: ITALIAN 102 OR EQUIVALENT  
4 LECT HRS, 2 LAB HRS  
STAFF 4 CREDITS
- ITAL 202 INTERMEDIATE ITALIAN II  
A CONTINUATION OF ITAL 201. AN INTENSIVE REVIEW OF GRAMMAR AND  
FURTHER STUDY OF AUDIO-LINGUAL SKILLS WITH CORRELATED READINGS  
IN ITALIAN CULTURE.  
PREREQUISITE: ITALIAN 201 OR EQUIVALENT.  
4 LECT HRS, 2 LAB HRS  
STAFF 4 CREDITS
- ITAL 261 THE CONTEMPORARY ITALIAN NOVEL  
AN ANALYSIS OF THE LEADING ARTISTIC AND SOCIAL PROBLEMS OF THE  
TWENTIETH CENTURY IN SUCH REPRESENTATIVE AUTHORS AS LEVI,  
VITTORINI, MORAVIA, SILONE, SUEVO, PAVESE, PASOLINI, AND  
PRATOLINI. READINGS AND DISCUSSIONS IN ENGLISH.  
3 LECT HRS  
MR. KARAT 4 CREDITS
- ITAL 262 THE THEATRE OF ITALY  
THE EVOLUTION OF THE THEATRE FROM THE RENAISSANCE TO THE AVANT-  
GARDE. (READINGS AND DISCUSSIONS IN ENGLISH.)  
3 LECT HRS  
MR. KARAT 4 CREDITS
- ITAL 265 MASTERPIECES OF ITALIAN LITERATURE  
A STUDY OF SOME OF THE REPRESENTATIVE AUTHORS FROM THE MIDDLE AGES  
TO THE MODERN TIME. (READINGS AND DISCUSSIONS CONDUCTED IN  
ENGLISH)  
3 LECT HRS  
STAFF 4 CREDITS
- ITAL 266 POLITICAL THOUGHT IN ITALIAN LITERATURE  
POLITICAL IDEAS FROM MEDIEVAL UNIVERSALISM TO MODERN NATIONALISM.  
READINGS AND DISCUSSION IN ENGLISH.  
3 LECT HRS  
MR. KARAT 4 CREDITS
- ITAL 268 THE ITALIAN-AMERICAN EXPERIENCE -- LITERATURE AND SOCIETY  
A STUDY OF THE CONTRIBUTION OF AMERICANS OF ITALIAN DESCENT TO THE  
AMERICAN CIVILIZATION, AND OF THE INTERACTION OF THE TWO CULTURES  
THROUGH WORKS OF FICTION AND NON-FICTION. CONSIDERATION OF THE  
REGIONS FROM WHICH THE ORIGINAL IMMIGRANTS CAME. READINGS AND  
DISCUSSIONS IN ENGLISH.  
3 LECT HRS  
MR. VOLPE 4 CREDITS
- ITAL 270 DANTE'S DIVINE COMEDY  
A CLOSE READING OF DANTE'S MASTERPIECE -- INFERNO, PURGATORY,  
PARADISE -- IN CONTEXT OF MEDIEVAL CIVILIZATION. READINGS AND  
DISCUSSIONS IN ENGLISH.  
3 LECT HRS  
MR. VOLPE 4 CREDITS
- ITAL 271 ITALIAN CULTURE AND CIVILIZATION  
A STUDY OF THE MAJOR CONTRIBUTIONS OF ITALY TO WORLD CULTURE AND  
CIVILIZATION FROM THE 13TH CENTURY TO THE UNIFICATION OF  
ITALY. READINGS AND DISCUSSIONS IN ENGLISH.  
3 LECT HRS, MUSEUM VISITS  
MR. GOLINO 3 CREDITS
- ITAL 272 ITALIAN CULTURE AND CIVILIZATION  
A CONTINUATION OF ITALIAN 271. A STUDY OF THE MAJOR CONTRIBUTIONS OF  
ITALY TO WORLD CULTURE AND CIVILIZATION FROM THE UNIFICATION OF
- ITALY TO THE PRESENT DAY. READINGS AND DISCUSSION IN ENGLISH.  
3 LECT HRS, MUSEUM VISITS  
MR. GOLINO 3 CREDITS
- ITAL 274 TWENTIETH CENTURY ITALIAN PLAYRIGHTS  
INTERDISCIPLINARY COURSE WITH STRESS UPON THE INTERDEPENDENCE AND  
CONTRASTS IN THE ART OF THE PLAYWRIGHT AND THE ART OF THE THEATRE.  
THEORY VS. PRACTICAL APPLICATION. THE PLAY AS CONCEIVED AND WRITTEN  
VS. THE PLAY AS PRODUCED. IN THE CONTEXT OF THE DRAMATIC LITERATURE  
OF PRE- AND POST-EXISTENTIALIST ITALIAN PLAYRIGHTS SUCH AS  
PIRANDELLO, RETTI AND DE FILIPPO. READINGS AND DISCUSSIONS IN  
ENGLISH.  
3 OR 4 LECT HRS  
MR. KARAT AND MR. ROBERTS 4-5 CREDITS
- ITAL 301 ITALIAN COMPOSITION AND CONVERSATION  
AN INTENSIVE REVIEW OF GRAMMAR, EXERCISES IN FREE COMPOSITION, AND  
ADVANCED CONVERSATIONAL PRACTICE.  
PREREQUISITE: ITALIAN 102 OR EQUIVALENT AND DEPARTMENTAL PERMISSION  
3 LECT HRS  
STAFF 3 CREDITS
- ITAL 302 LITERARY THEORIES AND BIBLIOGRAPHY  
AN INTRODUCTION TO THE METHODS OF LITERARY ANALYSIS AND ACQUISITION  
OF BIBLIOGRAPHICAL SKILLS.  
PREREQUISITE: ITALIAN 301 OR EQUIVALENT AND DEPARTMENTAL PERMISSION  
3 LECT HRS  
STAFF 3 CREDITS
- ITAL 311 INTRODUCTION TO ITALIAN CULTURE THROUGH LITERATURE  
A SURVEY OF ITALIAN LITERATURE AS A REFLECTION OF ITALIAN CIVIL-  
IZATION FROM THE RENAISSANCE TO THE MODERN PERIOD.  
PREREQUISITE: ITALIAN 102 OR EQUIVALENT  
3 LECT HRS  
STAFF 3 CREDITS
- ITAL 312 INTRODUCTION TO ITALIAN CULTURE THROUGH LITERATURE  
A CONTINUATION OF ITAL 311. A SURVEY OF ITALIAN LITERATURE AS A  
REFLECTION OF ITALIAN CIVILIZATION FROM THE RENAISSANCE TO THE MODERN  
PERIOD.  
PREREQUISITE: ITALIAN 102 OR EQUIVALENT.  
3 LECT HRS  
STAFF 3 CREDITS
- ITAL 320 DANTE AND THE QUECENTO  
DANTE'S LYRIC POEMS EXAMINED IN THE LIGHT OF THE ITALIAN LYRICAL  
TRADITION FROM THE SICILIAN SCHOOL TO THE DOLCE STIL NUOVO.  
PREREQUISITE: ITALIAN 311 OR DEPARTMENTAL PERMISSION  
3 LECT HRS  
MR. CARRARA 3 CREDITS
- ITAL 321 DANTE--COMMEDIA I  
SELECTIONS FROM THE EARLIER WORKS OF DANTE AS AN INTRODUCTION TO THE  
STUDY OF THE COMMEDIA. THIS SEMESTER IS DEVOTED TO THE STIL NUOVO,  
THE VITA NUOVA, AND A CLOSE READING OF THE INFERNO.  
PREREQUISITE: ITALIAN 311 OR EQUIVALENT AND DEPARTMENTAL PERMISSION.  
3 LECT HRS  
MR. VOLPE 3 CREDITS
- ITAL 322 DANTE--COMMEDIA II  
A CLOSE READING OF THE PURGATORIO AND THE PARADISIO.  
PREREQUISITE: ITALIAN 311 OR EQUIVALENT AND DEPARTMENTAL PERMISSION  
3 LECT HRS  
MR. VOLPE 3 CREDITS
- ITAL 331 PETRARCA AND ROCCACCIO  
AN ANALYSIS AND DISCUSSION OF THE WORKS OF THESE TWO MASTERS AS  
THEY REFLECT THE HUMANIST REJECTION OF MEDIEVAL MYSTICISM AND PRE-  
OCCUPATION WITH MAN'S FARTHLY CONDITION.  
PREREQUISITE: ITALIAN 311 OR EQUIVALENT AND DEPARTMENTAL PERMISSION.  
3 LECT HRS  
MR. CARRARA 3 CREDITS
- ITAL 341 THE AGE OF HUMANISM IN ITALY  
THE HUMANIST LITERATURE OF THE ITALIAN RENAISSANCE IN THE LIGHT OF



|      |                                                                                                                                                                                                                                                                                                                                                        |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ITAL | THE INTELLECTUAL AND ARTISTIC PREOCCUPATIONS OF THE AGE.<br>PREREQUISITE: ITALIAN 311 OR EQUIVALENT AND DEPARTMENTAL PERMISSION.<br>3 LECT HRS<br>MR. GIUSTINIANI                                                                                                                                                                                      | ITAL                  | 440 LITERATURA DIALETTALE ITALIANA<br>THE IMPACT OF DIALECT POETRY ON ITALIAN LITERATURE PARTICULARLY IN THE ROMANTIC PERIOD. IN RELATION TO THE ITALIAN QUESTION OF THE LINGUA.<br>PREREQUISITE: ITALIAN 311 OR EQUIVALENT AND DEPARTMENTAL PERMISSION<br>3 LECT HRS<br>MR. GIUSTINIANI                                                                                                                                                                                                                        |
| ITAL | 342 THE ITALIAN RENAISSANCE<br>MACHIAVELLI, CASTIGLIONE, ARIOSTO, AND TASSO AS EXPONENTS OF THE MULTIPLE ASPIRATIONS AND ACHIEVEMENTS OF ITALY'S GOLDEN AGE.<br>PREREQUISITE: ITALIAN 311 OR EQUIVALENT AND DEPARTMENTAL PERMISSION.<br>3 LECT HRS<br>MR. GIUSTINIANI                                                                                  | ITAL                  | 490 SPECIAL TOPICS<br>IN-DEPTH STUDY OF A PARTICULAR AUTHOR, WORK, THEME, OR HISTORICAL PERIOD. COURSE CONTENT WILL VARY EACH TIME THE COURSE IS OFFERED. STUDENTS ARE INVITED TO SUGGEST TOPICS OF SPECIAL INTEREST TO THEM.<br>PREREQUISITE: ITAL 311 OR EQUIVALENT AND DEPT. PERMISSION<br>3 LECT HRS<br>STAFF                                                                                                                                                                                               |
| ITAL | 350 THE RENAISSANCE EPIC<br>THE EVOLUTION OF THE EPIC POEM IN ITALIAN LITERATURE OF THE RENAISSANCE - PULCI, MOLARDO, ARIOSTO, TASSO.<br>PREREQUISITE: ITALIAN 311 AND DEPARTMENTAL PERMISSION<br>3 LECT HRS<br>MR. VOLPE                                                                                                                              | ITAL                  | 499 HONORS THESIS IN ITALIAN I II<br>INDEPENDENT AND ORIGINAL INVESTIGATION OF A SPECIFIC ASPECT OF ITALIAN LITERATURE OF SPECIAL INTEREST TO THE STUDENT, UNDER THE SUPERVISION OF A DEPARTMENTAL ADVISOR.<br>PREREQUISITE: DEPARTMENTAL PERMISSION<br>HRS BY ARRANGEMENT<br>STAFF                                                                                                                                                                                                                             |
| ITAL | 381 ITALIAN LITERATURE OF THE 17TH AND 18TH CENTURIES<br>MARINO, VICO, GOLDONI, PARINI, AND ALFIERI AS EXAMPLES OF THE DEVELOPMENT FROM THE EXTRAVAGANCE OF THE BAROQUE TO THE RATIONALISM OF THE AGE OF ENLIGHTENMENT.<br>PREREQUISITE: ITALIAN 311 OR EQUIVALENT AND DEPARTMENTAL PERMISSION.<br>3 LECT HRS<br>MR. KARAT                             | ITAL                  | 596 METHODS AND PRACTICE TEACHING OF ITALIAN IN SECONDARY SCHOOLS<br>THE ISSUES, PRINCIPLES AND METHODS OF SECONDARY SCHOOL ITALIAN LANGUAGE TEACHING. SUPERVISION AND CRITIQUE OF PRACTICE TEACHING.<br>PREREQUISITE: 6 HOURS EDUCATION COURSES AND ADMISSION TO TEACHER CERTIFICATION PROGRAM<br>3 LECT HRS, 20 HRS PRACTICE TEACHING<br>MR. CARARA                                                                                                                                                           |
| ITAL | 411 NEO-CLASSICISM AND ROMANTICISM<br>AN ANALYSIS OF THIS COMPLEX MOVEMENT IN ITS EXALATION OF LIBERTY AND IMAGINATION DURING THE REVOLUTIONARY PERIOD OF THE RISORGIMENTO WHEN ITALY BECAME A NATION. MONTI, FOSCOLI, LEOPARDI, AND MANZONI.<br>PREREQUISITE: ITALIAN 311 OR EQUIVALENT AND PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MR. GIUSTINIANI | ITAL                  | 596 CURRICULUM AND METHODS STUDENTS TEACHING - ITALIAN<br>PREREQUISITE: 6 HOURS EDUCATION COURSES AND ADMISSION TO THE TEACHER CERTIFICATION PROGRAM<br>3 LECT HRS, 20 LAB HRS (PRACTICE TEACHING)<br>STAFF                                                                                                                                                                                                                                                                                                     |
| ITAL | 431 THE MODERN NOVEL<br>AN ANALYSIS OF THE POST-ROMANTIC LITERARY TRENDS SUCH AS VERISMO, REGIONALISM, AND NEO-REALISM. SOME OF THE AUTHORS TO BE STUDIED ARE VERGA, SVEVO, PRINDELLO, AND SILONE.<br>PREREQUISITE: ITALIAN 311 OR EQUIVALENT AND DEPARTMENTAL PERMISSION.<br>3 LECT HRS<br>MR. KARAT                                                  | JAPANESE<br>JAPAN 101 | ELEMENTARY JAPANESE I<br>FOR STUDENTS WITH NO PREVIOUS LANGUAGE TRAINING IN JAPANESE. AN INTRODUCTION TO MODERN JAPANESE - PRONUNCIATION, CONVERSATION AND THE ELEMENTS OF THE WRITING SYSTEM. AT THE CONCLUSION OF THE COURSE THE STUDENTS WILL HAVE LEARNED TO CONVERSE USING THE BASIC PATTERNS, TO READ AND WRITE HIRAGANA - THE PHONETIC ALPHABET, AND TO RECOGNIZE ONE HUNDRED KANJI - CHINESE CHARACTERS.<br>4 LECT HRS, 1 LAB HR<br>MR. KENNEY                                                          |
| ITAL | 432 CONTEMPORARY ITALIAN NOVEL<br>SUCH TRENDS AS LITERATURA DI COSTUME, IL ROMANZO PSICOLOGICO AND "I MIMETICI" AND THE AVANT-GARDE MOVEMENTS CONSIDERED IN THE WRITINGS OF LEVI, VITTORENTI, MORAVIA, PASOLINI AND OTHERS.<br>PREREQUISITE: ITALIAN 311 OR EQUIVALENT AND DEPARTMENTAL PERMISSION<br>3 LECT HRS<br>MR. CARARA                         | JAPAN 102             | ELEMENTARY JAPANESE II<br>CONTINUATION OF JAPANESE I. FOR STUDENTS WITH NO PREVIOUS LANGUAGE TRAINING IN JAPANESE. AN INTRODUCTION TO MODERN JAPANESE - PRONUNCIATION, CONVERSATION AND THE ELEMENTS OF THE WRITING SYSTEM. AT THE CONCLUSION OF THE COURSE THE STUDENT WILL HAVE LEARNED TO CONVERSE USING THE BASIC PATTERNS, TO READ AND WRITE HIRAGANA - THE PHONETIC ALPHABET, AND TO RECOGNIZE ONE HUNDRED KANJI - CHINESE CHARACTERS.<br>PREREQUISITE-JAPANESE 101<br>4 LECT HRS, 1 LAB HR<br>MR. KENNEY |
| ITAL | 441 MODERN ITALIAN POETRY<br>A SURVEY OF THE PRINCIPAL POETS FROM CARUCCI TO SABA, WITH EMPHASIS ON HERMETICISM.<br>PREREQUISITE: ITALIAN 311 OR EQUIVALENT AND DEPARTMENTAL PERMISSION<br>3 LECT HRS<br>MR. VOLPE                                                                                                                                     | JAPAN 201             | INTERMEDIATE JAPANESE I<br>CONTINUATION OF JAPANESE I. USING THE BASIC PATTERNS.<br>PREREQUISITE: JAPANESE 102 OR EQUIVALENT<br>4 LECT HRS, 1 LAB HOUR<br>MR. KENNEY                                                                                                                                                                                                                                                                                                                                            |
| ITAL | 445 ANGLIO-ITALIAN LITERARY RELATIONS<br>INFLUENCE OF ITALIAN LITERARY MOTIFS AND FORMS ON ENGLISH LITERATURE, AND THE OPPOSITE CURRENT. MEDIEVAL IRISH ESCHATOLOGICAL VISIONS, BOCCACCIO AND CHAUCER, THE NOVELLA AND SHAKESPEARE, PASTORALISM, MARINO AND BAROQUE POETRY, ROMANTICISM.<br>3 LECT HRS<br>MR. GIUSTINIANI                              |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| ITAL | 478 READINGS AND RESEARCH I II<br>ESPECIALLY RECOMMENDED TO SENIORS, INDEPENDENT STUDY AND FREQUENT CONSULTATIONS WITH A DEPARTMENTAL ADVISOR ON A FAIRLY BROAD ASPECT OF ITALIAN LITERATURE OF SPECIAL INTEREST TO THE STUDENT.<br>PREREQUISITE: DEPARTMENTAL PERMISSION<br>HRS BY ARRANGEMENT<br>STAFF                                               |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| LATIN           | LATIN 313 JUVENAL; READING IN THE SATIRES OF JUVENAL;<br>BACKGROUND AND SCHOLARSHIP<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3 CREDITS   |
| LATIN 101       | FUNDAMENTALS OF LATIN; DESIGNED TO COMPLETE A STANDARD<br>BASIC TEXTBOOK WITH LATIN 102 FALL<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 4 CREDITS   |
| LATIN 102       | FUNDAMENTALS OF LATIN; CONTINUATION OF LATIN 101 SPRING<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4 CREDITS   |
| LATIN 113       | INTENSIVE LATIN; ACCELERATED ELEMENTARY LATIN FOR<br>STUDENTS WITH PREVIOUS LANGUAGE BACKGROUND; FUNDAMENTALS<br>IN ONE SEMESTER SPRING<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4 CREDITS   |
| LATIN 211       | INTERMEDIATE LATIN; REVIEW OF BASIC PRINCIPALS AND<br>INTRODUCTORY READING OF A PROSE AUTHOR (CICERO, LIVY) FALL<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4 CREDITS   |
| LATIN 222       | QVID METAMORPHOSES; CONTINUATION OF LATIN 211; CREDIT<br>MAY BE APPLIED TO MAJOR SPRING<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4 CREDITS   |
| LATIN 301       | CICERO; READING IN CICERO'S ORATIONS, PHILOSOPHICAL,<br>OR RHETORICAL WORKS; BACKGROUND AND SCHOLARSHIP<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3 CREDITS   |
| LATIN 302       | CAESAR; READING IN THE WORKS OF CAESAR; BACKGROUND<br>AND SCHOLARSHIP<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3 CREDITS   |
| LATIN 303       | ROMAN COMEDY READING IN THE PLAYS OF PLAUTUS AND<br>TERENCE; BACKGROUND AND SCHOLARSHIP<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3 CREDITS   |
| LATIN 304       | CATULLUS; READING IN THE POEMS OF CATULLUS; BACKGROUND<br>AND SCHOLARSHIP<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3 CREDITS   |
| LATIN 305       | ROMAN ELEGY; READING IN TIBULLUS AND PROPERTIUS AND<br>OTHER LATIN ELEGIAC POETS; BACKGROUND AND SCHOLARSHIP<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3 CREDITS   |
| LATIN 306       | TACITUS; READING IN THE HISTORICAL WORKS OF TACITUS;<br>BACKGROUND AND SCHOLARSHIP<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3 CREDITS   |
| LATIN 307       | SALLUST; READING IN THE HISTORICAL WORKS OF SALLUST;<br>BACKGROUND AND SCHOLARSHIP<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3 CREDITS   |
| LATIN 308       | LIVY; READING IN THE HISTORICAL WORKS OF LIVY;<br>BACKGROUND AND SCHOLARSHIP<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3 CREDITS   |
| LATIN 309       | LUCRETIUS; READING IN ON THE NATURE OF THINGS;<br>BACKGROUND AND SCHOLARSHIP<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3 CREDITS   |
| LATIN 310       | VIRGIL; READING IN THE WORKS OF VIRGIL WITH PRIMARY<br>EMPHASIS ON THE AENEID; BACKGROUND AND SCHOLARSHIP<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3 CREDITS   |
| LATIN 311       | PETRONIUS; READING IN THE SATYRICON; BACKGROUND<br>AND SCHOLARSHIP<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3 CREDITS   |
| LATIN 312       | HORACE; READING IN THE WORKS OF HORACE; BACKGROUND<br>AND SCHOLARSHIP<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3 CREDITS   |
| LATIN 478-479   | INDEPENDENT STUDY; DIRECTED PROJECTS IN LATIN<br>LANGUAGE AND LITERATURE<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1-3 CREDITS |
| LATIN 490       | HONORS; SPECIAL PROJECTS IN LATIN LANGUAGE<br>AND LITERATURE FOR HONORS CANDIDATES<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1-3 CREDITS |
| LATIN AMERICAN  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |
| LAT AM 301      | SPANISH SPEAKING PEOPLE IN URBAN U.S.A.;<br>AN EXAMINATION OF THE PUERTO RICAN, MEXICAN, CUBAN AND DOMINICAN<br>MIGRATIONS TO THE NORTH AMERICAN MAINLAND. A PRELIMINARY OVERVIEW OF<br>THE HISTORICAL AND CULTURAL BACKGROUNDS OF THESE MIGRATIONS WILL BE<br>FOLLOWED BY A MORE FOCUSED ANALYSIS OF ORGANIZATIONAL, OCCUPATIONAL,<br>EDUCATIONAL, MEDICAL AND HOUSING PATTERNS WITHIN THE SPANISH SPEAKING<br>POPULATION OF HOUSTON.<br>PREREQUISITE: SOME PREVIOUS COURSE EXPERIENCE IN ANY OF<br>THE SOCIAL SCIENCES OR SOME DEMONSTRABLE<br>FAMILIARITY WITH LATIN AMERICAN SOCIETY AND CULTURE.<br>3 LEFT HRS<br>STAFF                                             | 3 CREDITS   |
| LAT AM 320      | DEVELOPMENT AND EQUITY IN LATIN AMERICA<br>PREREQUISITE: SENIOR ONLY: LATIN OR SPANISH<br>AMERICAN CONCENTRATORS<br>3 LEFT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3 CREDITS   |
| LAW AND JUSTICE |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |
| LAWJUS 101      | FOUNDATIONS IN LAW AND JUSTICE<br>A TEAM-TAUGHT, NON-DISCIPLINARY INVESTIGATION INTO SOME GENERAL<br>PROBLEMS AND DIMENSIONS OF LAW AND JUSTICE. SUBJECT MATTER INCLUDES-<br>BANDITS AND OUTLAWS, THE SOURCE AND LIMITS OF LEGAL AUTHORITY, LEGAL<br>CODES, THE LAW AND SOCIAL JUSTICE, CRIMES AND PUNISHMENTS, EMPHASIS<br>ON BASIC ACADEMIC SKILLS, AND ON WORK IN SMALL GROUPS. OPEN TO<br>FRESHMEN ONLY. SATISFIES ONE SEMESTER CORE REQUIREMENT IN FRESHMAN<br>ENGLISH AND ONE SEMESTER OF EITHER HUMANITIES OR SOCIAL SCIENCES.<br>PREREQUISITE: FRESHMAN STANDING<br>3 LEFT HRS, 3 DISC HRS<br>MR. FOSTER (PHILOSOPHY) MR. MART (ENGLISH) MR. JOHNSON (SOCIOLOGY) | 3 CREDITS   |
| LAWJUS 102      | FRESHMAN SEMINAR IN LAW AND JUSTICE<br>A SEMINAR EXAMINATION OF SPECIFIC ISSUES IN LAW AND JUSTICE EMERGING<br>FROM THE GENERAL THEMES STUDIED IN INTER-DISCIPLINARY 101-LAW AND<br>JUSTICE-. OPEN ONLY TO STUDENTS WHO HAVE PASSED INTER-DISCIPLINARY<br>101. SATISFIES THE CORE REQUIREMENT FOR THE SECOND SEMESTER OF<br>FRESHMAN ENGLISH.<br>PREREQUISITE-LAW & JUSTICE 101 OR LAW & JUSTICE 104.<br>1 LEFT MR, 2 DISC HRS<br>MS. DITTMAR (ENGLISH), MR. EVANS (PHILOSOPHY) MR. SPENCE (POLITICS)                                                                                                                                                                    | 4 CREDITS   |
| LAWJUS 103      | PROBLEMS IN LAW AND JUSTICE<br>SHORT COURSE IN LAW AND JUSTICE ON SPECIALIZED PROBLEMS OF<br>CONTEMPORARY INTEREST.<br>HRS BY ARRG<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1-2 CREDITS |



LAWJUS 104 INTRODUCTION TO LAW AND JUSTICE  
INTRODUCTION TO LAW AND JUSTICE EXPLORES BOTH THE MUTUAL SUPPORT AND THE FREQUENT GAPS BETWEEN LAW AND JUSTICE AS REVEALED IN A SELECTION OF LITERARY, HISTORICAL, ANTHROPOLOGICAL, POLITICAL, PHILOSOPHICAL AND SOCIOLOGICAL MATERIALS. IT RANGES INQUIRINGLY FROM PRIMARY DEFINITIONS (PLATO, THE CONSTITUTION OF THE UNITED STATES) TO CONTEMPORARY SITUATIONS (WISEMAN'S 'LAW AND ORDER', MIDDLESEX COURT, KAFKA'S TRIAL) THAT POSE THE RECURRING TENSIONS BETWEEN WESTERN CULTURES' NEED FOR ORDER AND ITS HAUNTING YEN FOR JUSTICE THAT TRANSFUSES LAW. THE COURSE - WHICH PARALLELS THE FOUNDATION COURSE IN LAW AND JUSTICE - USES LECTURES, DISCUSSIONS, FIELD TRIPS, FILMS AND TAPES, AND EXPERTS OUTSIDE THE UNIVERSITY COMMUNITY.  
3 LECT HRS  
MR. BRODIEPICK, (HISTORY) MR. COHEN (PHILOSOPHY)  
4 CREDITS

LAWJUS 210 PRISONS AND PUNISHMENT  
TOPICS OF PUNISHMENT, INSTITUTIONALIZED PUNISHMENT, THE HUMAN NEED TO PUNISH, ATMS OF JUSTIFICATIONS OF PUNISHMENT, SUCH FORMS, NEEDS, AND INSTITUTIONS WILL BE EXPLORED THROUGH AUTOBIOGRAPHY, MEDIA MATERIALS, AND VARIOUS CREATIVE ART FORMS CONCERNED WITH OR EMANATING FROM PUNITIVE SITUATIONS AND INSTITUTIONS.  
3 LECT HRS  
MR. GABRETT (SOCIOLOGY) MR. SWARTZ (PHILOSOPHY)  
4 CREDITS

LAWJUS 220 SOCIAL JUSTICE  
AN EXAMINATION OF SOME BASIC PROBLEMS OF SOCIAL JUSTICE AND THEIR RELATION TO MORE ABSTRACT PHILOSOPHICAL IDEAS OF JUSTICE. THIS COURSE WILL NOT ONLY FOCUS ON THE WAYS THAT THESE IDEAS HAVE BEEN IMPLEMENTED, BUT IT WILL ALSO BE CONCERNED WITH WAYS IN WHICH PRINCIPLES OF JUSTICE HAVE BEEN APPEALED TO IN CRITICIZING SOCIAL PRACTICES. LITERARY EXPRESSION OF THESE CRITICAL ATTITUDES TOWARDS PRACTICES INVOLVING SOCIAL INJUSTICE WILL BE A PRIMARY EMPHASIS IN THE COURSE, AND PART OF THIS FOCUS WILL BE AIMED ON THE RHETORICAL FEATURES OF THESE LITERARY SOURCES WHICH ARE AIMED AT THE EMOTIONS AND ACTIONS RATHER THAN JUST INTELLECTUAL ENLIGHTENMENT. FACULTY FROM MR. HLUM (PHILOSOPHY)MS. DITTMAR (ENGLISH)  
3 LECT HRS  
4 CREDITS

LAWJUS 230 LAW AND SOCIAL CHANGE  
THE ROLE OF LEGISLATURE AND JUDGE-MADE LAW IN PROCESSING AND MEDIATING OR SETTLING PRIVATE OR SOCIAL DISPUTES, IN NEGOTIATING AND ENFORCING VOLUNTARY AGREEMENTS, FACILITATING OR RETARDING SOCIAL CHANGE. EMPHASIS ON COMMON LAW INSTITUTIONS AND THE DEFINITION OF DISPUTES WHICH BECOME FORMALLY JUSTIFIABLE, AS SEEN IN HISTORICAL AND CONTEMPORARY PERSPECTIVES, AND IN THE LIGHT OF HUMAN VALUES UNDERLYING DIFFERENT SOCIAL AND POLITICAL STRUCTURES.  
3 LECT HRS  
MR. SPENCE (POLITICS) MR. FELDRENG (HISTORY)  
4 CREDITS

LAWJUS 240 COURTS AND SOCIETY  
THEORETICAL AND IMAGINATIVE EXPLORATIONS OF RATIONALES AND UTOPIAN MODELS FOR THE COURTS, THEIR ORIGINS IN HUMAN EXPERIENCE, THEIR PRIMITIVE AND HISTORICAL ANALOGUES IN PROCESSES OF HUMAN JUDGMENT, THEIR EFFECTS ON HUMAN BEINGS, AND THEIR VALUES, NOT ONLY WILL THE OPERATION OF THE COURTS BE STUDIED THROUGH ACTUAL OBSERVATION AND MOCK TRIALS CONDUCTED ON CAMPUS BY A LOCAL JUDGE, BUT THESE WILL BE COMPARED WITH IDEALIZED AND POPULARIZED CONCEPTIONS OF COURTROOM PROCEEDINGS, IN AN ATTEMPT TO UNDERSTAND THE VALUES THAT ARE SUPPOSED TO BE EMBODIED IN COURTROOM PROCEDURE.  
3 LECT HRS  
MR. FOSTER (PHILOSOPHY) MR. MATZ (LEGAL EDUCATION)  
3 CREDITS

LAWJUS 250 OWNERSHIP, PROPERTY AND LEGALITY  
THE RELATIONSHIP BETWEEN HUMAN BEINGS AND THE THINGS THEY POSSESS INVESTIGATED FROM THE POINT OF VIEW OF HUMAN RIGHTS TO PROPERTY, THE ECONOMIC SYSTEMS THAT HAVE BEEN DEVELOPED TO INSTITUTIONALIZE THESE RIGHTS, AND THE LEGAL MECHANISMS USED TO PROTECT THEM. NOT ONLY WILL THIS COURSE DEAL WITH THESE CONCEPTS, PRINCIPLES, AND ECONOMIC SYSTEMS, IT WILL ALSO FOCUS ON THE REACTIONS OF PEOPLE TO THESE THROUGH THEIR FORMS OF NATURAL EXPRESSION. THIS COURSE FULFILLS A CORE UPPER-LEVEL OFFERING IN THE LAW AND JUSTICE CONCENTRATION.  
3 LECT HRS  
MS. KINGSTON-MANN (HISTORY), MS. UPDIKE (ECONOMICS)  
3 CREDITS

LAWJUS 260 AUTHORITY, LIBERTY AND LAW  
THIS COURSE WILL DEAL WITH THE INTERPLAY BETWEEN AUTHORITY, THE RULE OF LAW AND THE FREEDOM OF THE INDIVIDUAL. ISSUES TO BE DEALT WITH CONCERN THE LEGITIMIZATION OF AUTHORITY, POWER AND THE WAY LAW FITS INTO A FREE SOCIETY. THESE ISSUES WILL BE APPROACHED NOT ONLY FROM A THEORETICAL POINT OF VIEW, BUT WILL BE DISCUSSED BY WAY OF SUCH WORKS AS 1984 AND LORD OF THE FLIES, FOCUSING ON THE INDIVIDUAL AND THE SPEECH OF HIS OWN PERSONAL FREEDOM IN A COMPLEX CONTEMPORARY SOCIETY GOVERNED BY LAW.  
3 LECT HRS  
MR. HART (ENGLISH), MR. SIMMONS (POLITICS)  
3 CREDITS

LAWJUS 470 SPECIAL TOPICS  
SPECIAL TOPICS COURSES ARE OFFERED BY THE LAWYER-IN-RESIDENCE OF THE LAW AND JUSTICE PROGRAM ON A VARIETY OF LEGAL ISSUES, AND BY MEMBERS OF THE FACULTY WHO WISH TO OFFER A DEPARTMENTALLY-BASED COURSE UNDER THE LAW AND JUSTICE HEADING. SUBJECTS, CREDITS, FACULTY, REQUIREMENTS - ALL WILL VARY DEPENDING ON WHAT IS BEING OFFERED BY WHOM.  
HRS BY ARRANGEMENT  
STAFF  
CREDITS VARY

LAWJUS 478 INDEPENDENT STUDY  
BY ARRANGEMENT BETWEEN THE STUDENT AND THE FACULTY SUPERVISOR.  
PREREQUISITE: PERMISSION OF THE LAW AND JUSTICE OFFICE BEFORE REGISTRATION.  
HRS BY ARRANGEMENT  
STAFF  
CREDITS VARY

LAWJUS 500 SENIOR YEAR DIRECTED STUDY  
EACH CONCENTRATION IN LAW AND JUSTICE WILL BE REQUIRED TO TAKE A 3-CREDIT SEMINAR DEALING WITH A SPECIFIC TOPIC IN LAW AND JUSTICE. PARTICIPATION IN THE SEMINAR WILL INVOLVE THE WRITING OF A MAJOR PAPER ON THAT TOPIC. THE SEMINAR WILL BE OFFERED IN EACH SEMESTER. IN PARTICULAR CASES, THE STUDENT MAY TAKE THE SEMINAR IN EACH TERM OF THE SENIOR YEAR, IF IN THE OPINION OF THE LAW AND JUSTICE ADVISORY COMMITTEE, THE PROJECT WARRANTS IT. A) THE FORMAL SEMINAR WILL CONSIST OF THE READING AND DISCUSSION OF A FEW MAJOR WORKS DEALING WITH A PARTICULAR THEME IN ORDER TO REVIEW, REFRESH AND SYNTHESIZE THE STUDENTS' ACADEMIC EXPERIENCE IN LAW AND JUSTICE. ESPECIALLY AS THE WORK RELATES TO THEIR MAJOR. B) THE SENIOR PAPER WILL BE A MAJOR ESSAY DEALING WITH THEIR INDIVIDUAL TOPIC.  
PREREQUISITE: SENIOR, LAW AND JUSTICE CONCENTRATORS ONLY  
3 LECT HRS  
STAFF  
3 CREDITS

LAWJUS 501 INTERN IN LAW AND JUSTICE  
SUPERVISED IN-SERVICE TRAINING AS TUTOR AND DISCUSSION LEADER AS JUNIOR STAFF MEMBER OF THE IFC COURSE IN LAW AND JUSTICE. THE TUTOR WILL ATTEND TEACHING-TEAM MEETINGS, ATTEND LECTURES, HELP LEAD SMALL DISCUSSION GROUPS, AND COUNSEL AND ASSIST INDIVIDUAL FRESHMAN IN BASIC PROBLEMS OF READING AND WRITING.  
3 LECT HRS, 3 DISC HRS  
MR. HART (ENGLISH) MR. JOHNSON (SOCIOLOGY) MR. EVANS (PHILOSOPHY)  
5 CREDITS

LAWJUS 502 INTERN IN LAW AND JUSTICE SEMINAR  
1 LECT HR, 2 DISC HRS  
STAFF  
3 CREDITS

#### MANAGEMENT

#### Degree Requirements

The requirements for the degree in Management for those students who enter the Management Program in September, 1976, and for students who entered as Freshmen in September, 1975, are listed in the section of this course listing entitled Graduation Requirements.

The degree requirements for those students who entered the Management Program as transfers in September, 1975, and January, 1976, are contained in the document, Requirements for the Bachelor's Degree in Management-July, 1975. Copies of this document are available in the College of Professional Studies---Dean's Office---080-3-161.



#### Concentration Requirements

Eight concentration areas will be available to Management students in Fall of 1976. A description of the goals and requirements for each of the concentrations follows.

#### Accounting

The Concentration in Accounting will prepare students to work with accounts in private business. The central point of view is the use of accounting information for decision making within a firm. The course can serve as a step toward becoming a Certified Public Accountant, but students would need to take additional courses beyond those currently available at UN/Boston before sitting for the C.P.A. examinations.

Students electing the Concentration in Accounting are required to successfully complete the following courses:

MGT 442 Cost and Management Accounting  
MGT 460 Management Information Systems and Controls  
MGT 443 Financial Analysis for Lenders and Investors  
MGT 445 Issues in Financial Accounting

#### Human Resources Management

There are two options within the Human Resources Management Concentration: Personnel and Labor Relations in the Private Sector and Personnel and Labor Relations in the Public Sector. These concentrations are designed to prepare students for careers in such areas as manpower planning; recruitment, selection, and training; wage and salary administration; performance evaluation; equal employment opportunity; and the general area of industrial and labor relations.

Students electing the Human Resources Concentration are required to take the following courses:

#### Option One: Personnel and Labor Relations in the Private Sector

MGT 450 Behavioral Techniques in Human Resources Management  
MGT 451 Organizational Development  
MGT 452 Private Sector Personnel Systems  
MGT 453 Private Sector Labor Relations Systems

#### Option Two: Personnel and Labor Relations in the Public Sector

MGT 450 Behavioral Techniques in Human Resources Management  
MGT 451 Organizational Development  
MGT 454 Public Sector Personnel Systems  
MGT 455 Public Sector Labor Relations Systems

#### Management Science

The Concentration in Management Science is designed to prepare students for careers in such areas as computer systems analysis, operations analysis, production management, and transportation systems. It also is an excellent concentration option for generalists who intend to seek a graduate degree in Management.

Students electing the Management Science Concentration are required to take the following courses:

MGT 420 Mathematical Models of Management Systems I  
MGT 421 Mathematical Models of Management Systems II

and at least two of the following:

MGT 422 Managerial Applications of Computer Programming  
MGT 423 Statistical Decision Theory  
MGT 425 Advanced Topics in Management Science  
MGT 352 Mathematical Economics

#### Marketing

The Concentration in Marketing is designed for students who wish to pursue careers in sales and marketing management. While most of these opportunities are found in profit oriented organizations in the private sector, interesting career possibilities exist for those with marketing skills in non-profit and public sector organizations.

Students electing the Marketing Concentration are required to take the following courses:

MGT 430 Sales and Sales Management  
MGT 432 Marketing Research  
MGT 433 Marketing Management

#### Private Financial Management

The Concentration in Private Financial Management provides continued study of the knowledge and skills that are needed for informed decision making by persons who manage the finances of private business or by those who direct funds into firms through extending loans or making equity investments.

Students electing the Private Financial Management Concentration are required to take the following courses:

MGT 444 The Theory of Business Finance  
MGT 443 Financial Analysis for Lenders and Investors

One of the following:

MGT 460 Management Information Systems and Controls  
MGT 445 Issues in Financial Accounting  
MGT 446 Special Problems in Small Business

And an elective in a subject related to finance approved by\*the advisor.

#### Public Financial Management

The Concentration in Public Financial Management is designed for students who wish to pursue careers in the management of finances in the public sector. Positions in the budgeting, finance, and taxation departments of federal, state, and local government are the typical entry level jobs in this area. In addition, consulting firms, granting agencies, and private non-profit organizations need people with expertise in public financial management. Students electing this concentration will develop the knowledge and skills needed to deal with all aspects of financial management in public and non-profit organizations.

Students electing the Public Financial Management Concentration are required to take the following courses:

MGT 433 Management of Public Policy  
MGT 440 Public Budgeting Systems  
MGT 441 Financial Management in Government Entities

One of:

MGT 442 Cost and Management Accounting  
MGT 460 Management Information Systems and Controls  
MGT 317 Public Finance

#### Public Management

The Concentration in Public Management is designed for students who wish to pursue careers in the public sector but are unsure which specific area to choose. Students electing this concentration, therefore, will take a general set of courses that will orient them to a wide range of career possibilities in the public sector including those in personnel, labor relations, budgeting, finance, and program development. A variety of entry level management positions exist. Among these are those of legislative staff, executive assistant, departmental staff, and assistant town manager.

Students electing this concentration are required to take the following courses:

MGT 433 Management of Public Policy

and either:

MGT 436 Policy Analysis: Physical Delivery Systems OR

MGT 437 Policy Analysis: Social Delivery Systems

and either:

MGT 442 Cost and Management Accounting OR

MGT 460 Management Information Systems and Controls

MGT

### 100 THE LIBERAL ARTS AND THE WORLD OF WORK

THIS COURSE IS DESIGNED TO INFORM STUDENTS IN BROAD TERMS ABOUT THE WORLD OF WORK THEY PLAN TO ENTER: THE SOCIAL FUNCTIONS OF WORK, THE ORGANIZATIONAL SETTINGS IN WHICH WORK TAKES PLACE, THE DIFFERENT FORMS OF WORK AND THE VALUES ATTACHED TO WORK. THE COURSE WILL ALSO INTRODUCE STUDENTS TO THE CONCEPTUAL AND DISCIPLINARY TOOLS THEY WILL ENCOUNTER AT LATER STAGES IN THE MANAGEMENT PROGRAM. THIS COURSE WILL BE TAUGHT BY A TEAM OF FACULTY FROM SEVERAL FIELDS IN THE SOCIAL SCIENCES AND THE HUMANITIES.

MS. TAGLIACCOZZO, MR. BRODERICK, MR. SWARTZ, AND STAFF

4 CREDITS

MGT

### 102 WORK, TECHNOLOGY AND CULTURAL CHANGE

THIS COURSE INTRODUCES STUDENTS TO STUDY OF THE RELATIONSHIP BETWEEN TECHNOLOGICAL CHANGE AND THE CONDITIONS OF CULTURE, WITH PARTICULAR ATTENTION TO THE NATURE AND FUTURE OF WORK IN MODERN SOCIETY. THE IMPACT OF TECHNOLOGY ON SOCIETY IS EXAMINED IN THE PAST AND PRESENT, WITH PROJECTIONS OF FUTURE IMPACT. WORK AND GENERAL CULTURE ARE STUDIED AS THEY SHOW THE EFFECT OF TECHNOLOGY. ALTERNATIVE FEATURES ARE CONSIDERED THROUGH UTOPIAS AND CRITICAL PROJECTIONS.

MR. PATTERSON

4 CREDITS

MGT

### 110 COMMUNICATIONS

THIS COURSE, MEETING IN SMALL SECTIONS, WILL INTRODUCE STUDENTS TO THE IMPORTANCE OF EFFECTIVE COMMUNICATION IN BOTH THEIR CAREERS AND THEIR PERSONAL LIVES. TAUGHT BY MEMBERS OF THE ENGLISH DEPARTMENT OF COLLEGES 1 AND 11, THE COURSE WILL PROVIDE INTENSIVE PRACTICE IN WRITING AND SPEAKING, AS WELL AS EMPHASIZING CRITICAL THINKING, READING, AND LISTENING.

4 CREDITS

MGT

### 111 COMMUNICATIONS

A CONTINUATION OF THE TOPICS COVERED IN MGT 110.

PREREQUISITE: MGT 110

ENGLISH STAFF

4 CREDITS

MGT

### 125 COLLEGE ALGEBRA

INTENSIVE STUDY OF COLLEGE ALGEBRA DESIGNED FOR THOSE WHO HAVE NOT TAKEN SUFFICIENT MATHEMATICS TO PREPARE THEM FOR THE TOPICS COVERED IN MGT 330.

MS. AUSLANDER AND STAFF

4 CREDITS

MGT

### 130 QUANTITATIVE METHODS

THIS COURSE WILL INTRODUCE STUDENTS TO BASIC QUANTITATIVE IDEAS AND TOOLS THAT ARE AN IMPORTANT PART OF THEIR GENERAL EDUCATION AND WILL BE USEFUL IN UNDERSTANDING, DESCRIBING, AND SOLVING PROBLEMS THEY WILL ENCOUNTER LATER IN THE MANAGEMENT PROGRAM AND IN THEIR CAREERS. THE COURSE WILL INCLUDE A REVIEW OF ALGEBRA, FOLLOWED BY TOPICS FROM THE MATHEMATICS OF FINANCE AND FINITE MATHEMATICS. THIS COURSE IS THE BASIC COURSE IN QUANTITATIVE METHODS AND WILL BE TAKEN BY MOST STUDENTS DURING THEIR FRESHMAN YEAR. STUDENTS WHO HAVE NOT HAD TWO YEARS OF HIGH SCHOOL ALGEBRA MAY NEED TO TAKE MGT 125 TO PREPARE FOR THIS COURSE; A PLACEMENT EXAM IS AVAILABLE FOR STUDENTS TO DETERMINE IF THEY NEED TO TAKE MGT 125.

MS. AUSLANDER AND STAFF

4 CREDITS

MGT

### 140 INTRODUCTION TO MANAGEMENT

A FIRST COURSE IN THE FUNCTIONS AND PROBLEMS IN MANAGEMENT. DESIGNED TO INTRODUCE STUDENTS TO THE CONCRETE WORLD OF MANAGEMENT FOR WHICH MUCH OF THEIR SUBSEQUENT COURSE WORK WILL BE DESIGNED TO PREPARE THEM.

4 CREDITS

MANAGEMENT FACULTY

MGT

### 220 MANAGERIAL STATISTICS

THIS IS A NON-CALCULUS INTRODUCTION TO STATISTICAL DESCRIPTION AND INFERENCE. THE PURPOSE OF THE COURSE IS TO GIVE THE STUDENTS SUFFICIENT KNOWLEDGE SO THAT THEY WILL BE ABLE TO INTELLIGENTLY EVALUATE STATISTICAL REPORTS AND TO PROPERLY GATHER, TABULATE, AND ANALYZE RESEARCH DATA. TOPICS COVERED INCLUDE TABULATION AND STATISTICAL MEASUREMENT OF SAMPLE DATA, PROBABILITY (INCLUDING COMMON DISTRIBUTIONS), PARAMETRIC AND NONPARAMETRIC HYPOTHESES TESTING (TWO SAMPLE, CONTINGENCY TABLES, GOODNESS OF FIT), AND ANALYSIS OF VARIANCE), ESTIMATION, REGRESSION, CORRELATION, SURVEY AND SAMPLING TECHNIQUES, AND EXPERIMENTAL DESIGN.

MR. ERIKSEN AND STAFF

4 CREDITS

MGT

### 260 MASSACHUSETTS STATE GOVERNMENT AND ITS MANAGEMENT

A STUDY OF THE STRUCTURE AND FUNCTIONS OF MASSACHUSETTS STATE GOVERNMENT AND THE ORGANIZATIONAL PROBLEMS WHICH ARE INVOLVED IN ITS OPERATION. THE ROLES OF THE LEGISLATURE AND OF THE EXECUTIVE IN PLANNING, ORGANIZATIONAL DEVELOPMENT, STAFFING AND DIRECTING, AND CONTROL WILL BE DISCUSSED. THE BUDGET PROCESS, PERSONNEL AND CIVIL SERVICES WILL BE EXAMINED IN SOME DETAIL. THE APPLICABILITY OF SIMPLE MANAGERIAL PRINCIPLES TO THE STATE GOVERNMENT WILL BE DISCUSSED FROM THE STANDPOINT OF THE CITIZEN, WHO IS BOTH ITS OWNER AND ITS ULTIMATE CONSUMER.

MS. NEWMAN

3 CREDITS

MGT

### 320 INTRODUCTION TO OPERATIONS RESEARCH

THIS COURSE IS CONCERNED WITH THREE MAJOR SUBJECTS. THE FIRST SUBJECT, LINEAR PROGRAMMING, IS THE AREA OF GREATEST CONCENTRATION. THIS INCLUDES THE FORMULATION OF LINEAR OPTIMIZATION PROBLEMS AND THEIR SOLUTION USING GENERAL AND SPECIAL PURPOSE ALGORITHMS. SOME NETWORK ANALYSIS IS DISCUSSED. THE SECOND SECTION OF THE COURSE CONSISTS OF A BRIEF INTRODUCTION TO THE BASIC COMPUTER LANGUAGE. THE THIRD SUBJECT IS A STUDY OF THE VERY FUNDAMENTAL ASPECTS OF DIFFERENTIAL AND INTEGRAL CALCULUS AS APPLIED TO MANAGERIAL PROBLEMS. THE COURSE BUILDS ON MATERIALS DEVELOPED IN MGT 130.

PREREQUISITE: MGT 130 OR EQUIVALENT

STAFF

3 CREDITS

MGT

### 321 OPERATIONS MANAGEMENT

THIS IS AN INTRODUCTION TO THE PRINCIPLE PROBLEMS AND ISSUES THAT CONFRONT THE MANAGER OF THE INTERACTIONS AMONG PHYSICAL RESOURCES WHICH RESULT IN THE PRODUCTION OF A GOOD OR DELIVERY OF A SERVICE. THE COURSE ALSO EXPLORES METHODOLOGIES OF ANALYSIS AND DECISION MAKING AS APPLIED TO THESE PROBLEMS AND ISSUES. APPROPRIATE QUANTITATIVE TECHNIQUES SUCH AS CASH FLOW COVERAGE, MATHEMATICAL PROGRAMMING, REGRESSION ANALYSIS, DECISION ANALYSIS, QUEUING MODELS, AND SIMULATION ARE COVERED. THE REMAINDER OF THE COURSE STUDIES THE FUNDAMENTAL ELEMENTS OF PRODUCTION AND SERVICES DELIVERY MANAGEMENT. INCLUDES ARE SUCH TOPICS AS FACILITIES MANAGEMENT, WORK MEASUREMENT, PROCESS DESIGN, FORECASTING, SCHEDULING AND DISPATCHING, PRODUCTION AND INVENTORY CONTROL, QUALITY CONTROL, EFFECTS OF TECHNOLOGICAL CHANGE, AND ECONOMICS OF TRANSPORTATION AND LOGISTICS.

PREREQUISITE: MGT 320

STAFF

3 CREDITS

MGT

### 330 MARKETING IN THE PUBLIC AND PRIVATE SECTORS

MANAGERS—WHETHER IN BUSINESS, GOVERNMENT, OR OTHER TYPES OF ORGANIZATIONS—SHOULD BE CAPABLE OF PARTICIPATING IN THE PROCESS THROUGH WHICH AN ORGANIZATION ATTEMPTS TO ACHIEVE ITS OBJECTIVES BY ACTING ON AND REACTING TO ITS ENVIRONMENT. IN THIS COURSE, STUDENTS WILL LEARN TO ANALYZE THE STRUCTURE AND BEHAVIOR OF: - SOCIAL, ECONOMIC, TECHNOLOGICAL, POLITICAL, LEGAL AND OTHER SYSTEMS WITHIN WHICH AN ORGANIZATION OPERATES;



|      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |
|------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|      |     | PROGRAMMING, PROBABILISTIC INVENTORY MODELS, QUEUING THEORY, AND SIMULATION.<br>PREREQUISITE: MGT 420<br>MR. ERIKSEN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3 CREDITS |
| MGT  | 422 | MANAGERIAL APPLICATIONS OF COMPUTER PROGRAMMING<br>REVIEW OF THE BASIC LANGUAGE. MANAGERIAL DATA PROCESSING-<br>WITH EXAMPLES FROM THE VARIOUS DISCIPLINES.<br>PREREQUISITES: MGT 320 OR MATH 137; MGT 341, OR MGT 340<br>WITH MGT 341 TAKEN CONCURRENTLY.<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3 CREDITS |
| MGT  | 423 | STATISTICAL DECISION THEORY<br>TECHNIQUES IN DECISION MAKING UNDER UNCERTAINTY AND DECISION<br>MAKING UNDER CONFLICT. THE CONTENT INCLUDES ASSESSMENTS OF<br>SUBJECTIVE PROBABILITIES, DECISION TREES, VALUE OF PERFECT<br>INFORMATION, UTILITY THEORY, BAYESIAN STATISTICS, COST<br>AND VALUE OF SAMPLING, AND GAME THEORY.<br>PREREQUISITE: MGT 220, MATH 125, OR ECON 155<br>STAFF                                                                                                                                                                                                                                                                                                                                                                  | 3 CREDITS |
| MGT  | 425 | ADVANCED TOPICS IN MANAGEMENT SCIENCE<br>CONTINUED STUDY OF ONE OF THE TECHNIQUES COVERED IN MGT 323<br>OR MGT 324<br>PREREQUISITE: MGT 323<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3 CREDITS |
| ECON | 352 | MATHEMATICAL ECONOMICS<br>THE TRADITIONAL SIMPLE AND MULTIPLE LINEAR REGRESSION MODELS.<br>APPLICATION OF THESE MODELS TO ESTIMATING BOTH MICROECONOMIC<br>AND MACROECONOMIC RELATIONSHIPS.<br>PREREQUISITE: MGT 220 OR ECON 155<br>MR. PRIMONT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3 CREDITS |
| MGT  | 430 | SALES AND SALES MANAGEMENT<br>EXAMINES THE ACTIVITIES OF SELLING AND SALES MANAGEMENT. SALESMANSHIP<br>IS DEVELOPED IN ITS BROAD CONTEXT AS A SKILL FUNDAMENTAL TO MANAGERS<br>IN INTRA-AS WELL AS IN INTER-ORGANIZATIONAL NEGOTIATIONS WHERE THE<br>OBJECTIVE IS TO PERSUADE PEOPLE TO DO SOMETHING THEY WOULD NOT HAVE<br>DONE ON THEIR OWN INITIATIVE OR DIRECTION. SALES MANAGEMENT TAKES<br>UP THE PROBLEMS OF SALES ORGANIZATION; RECRUITING AND SELECTING<br>SALESMEN; SALES TRAINING; FORMULATING COMPENSATION AND<br>EXPENSE PLANS; SUPERVISING AND STIMULATING SALES ACTIVITIES; MORALE;<br>SALES PLANNING; EVALUATING SALES MEN; AND ANALYZING DISTRIBUTION<br>COSTS.<br>PREREQUISITE: MGT 330 AND 331 OR PERMISSION OF INSTRUCTOR<br>STAFF | 3 CREDITS |
| MGT  | 431 | CONSUMER BEHAVIOR AND MARKETING COMMUNICATIONS<br>ANALYZES INTERACTIONS BETWEEN CONSUMER DECISION-MAKING PROCESSES AND<br>COMMUNICATION PROCESSES USING CONCEPTS OF ECONOMICS, SOCIOLOGY,<br>PSYCHOLOGY, AND MASS AND INFORMAL COMMUNICATIONS IN ORDER TO DEVELOP<br>MARKETING COMMUNICATION STRATEGIES IN RESPONSE TO SPECIFIC MARKETING<br>PROBLEMS.<br>PREREQUISITE: MGT 330 AND 331 OR PERMISSION OF INSTRUCTOR<br>MR. MCCLURE                                                                                                                                                                                                                                                                                                                     | 3 CREDITS |
| MGT  | 432 | MARKETING RESEARCH<br>PRESENTS MARKETING RESEARCH AS THE SYSTEMATIC AND OBJECTIVE SEARCH<br>FOR AND ANALYSIS OF INFORMATION RELEVANT TO THE IDENTIFICATION AND<br>SOLUTION OF MARKETING PROBLEMS AS WELL AS FOR USE IN MANAGEMENT<br>INFORMATION SYSTEMS.<br>PREREQUISITE: MGT 330 AND 331, OR PERMISSION OF INSTRUCTOR<br>MR. MCCLURE                                                                                                                                                                                                                                                                                                                                                                                                                 | 3 CREDITS |
| MGT  | 433 | MARKETING MANAGEMENT<br>PROGRAMS ARE DEVELOPED IN RESPONSE TO THE ANALYSIS OF THE MAJOR PROBLEMS<br>FACING THE MARKETING EXECUTIVE. TOPICS INCLUDE MARKET ANALYSIS;<br>FORECASTING AND PLANNING; MARKETING ORGANIZATION; BUDGETING; PRODUCT<br>POLICY; PRICING; ADVERTISING AND SALES PROMOTION; PHYSICAL DISTRIBUTION<br>AND SALES FORCE ADMINISTRATION.<br>PREREQUISITE: MGT 330, 331 OR PERMISSION OF INSTRUCTOR                                                                                                                                                                                                                                                                                                                                    | 3 CREDITS |
|      |     | - INDIVIDUALS AND GROUPS WITHIN THOSE SYSTEMS TOWARDS WHICH AN<br>ORGANIZATION'S PRODUCTS OR SERVICES ARE DIRECTED AND FROM<br>WHICH ITS RESOURCES ARE OBTAINED.<br>STUDENTS WILL THEN LEARN TO FORMULATE, EXECUTE, AND EVALUATE<br>PROGRAMS DESIGNED TO ACHIEVE AN ORGANIZATION'S OBJECTIVES<br>BY INFLUENCING AND ADAPTING TO ITS EXTERNAL ENVIRONMENT. THE<br>COURSES WILL MAKE USE OF LECTURES, CLASS DISCUSSION, EXERCISES,<br>REPORT WRITING, AND CASE STUDIES.<br>MR. MCCLURE, MR. WEGNER, STAFF                                                                                                                                                                                                                                                | 3 CREDITS |
| MGT  | 331 | MARKETING IN THE PUBLIC AND PRIVATE SECTORS II<br>CONTINUATION OF MGT 330<br>PREREQUISITE: MGT 330 OR PERMISSION OF INSTRUCTOR<br>MR. MCCLURE, MR. WEGNER, STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3 CREDITS |
| MGT  | 340 | MANAGEMENT OF FINANCIAL RESOURCES I<br>THE GREATER PART OF THIS COURSE IS AN INTRODUCTION TO FINANCIAL<br>ACCOUNTING, EMPHASIZING CONCEPTS RATHER THAN BOOKKEEPING PROCEDURES.<br>THE COURSE ALSO INCLUDES BRIEF TREATMENT OF THE MANAGEMENT OF THE<br>SHORT-TERM FINANCIAL NEEDS OF PROFIT AND NON-PROFIT ENTITIES.<br>MR. HUNT, MR. LYKEN, STAFF                                                                                                                                                                                                                                                                                                                                                                                                     | 4 CREDITS |
| MGT  | 341 | MANAGEMENT OF FINANCIAL RESOURCES II<br>CONTINUATION OF THE STUDY OF SHORT-TERM FINANCIAL MANAGEMENT.<br>BASIC ASPECTS OF LONG-TERM FINANCE INCLUDING LEVERAGE, DEBT CAPACITY<br>AND DIVIDEND POLICY. INTRODUCTION TO THE TYPES OF SECURITIES<br>ISSUED BY PUBLIC AND PRIVATE ENTITIES. CAPITAL BUDGETING AND<br>THE TIME VALUE OF MONEY.<br>PREREQUISITE: MGT 340<br>MR. HUNT, MR. LYKEN, STAFF                                                                                                                                                                                                                                                                                                                                                       | 4 CREDITS |
| MGT  | 350 | HUMAN RESOURCES MANAGEMENT I<br>AN INTRODUCTORY COURSE CENTERED AROUND THE PROCESSES OF PLANNING, ORGANIZING<br>DIRECTING AND CONTROLLING ACTIVITIES AS THEY RELATE TO THE EFFECTIVE<br>UTILIZATION AND DEVELOPMENT OF PEOPLE IN FORMAL ORGANIZATIONS. STUDENTS<br>WILL BE EXPOSED TO THE ANALYTICAL TOOLS USEFUL IN CONCEPTUALIZING,<br>DIAGNOSING AND ACTING ON MANAGERIAL PROBLEMS RELATED TO THE INTERACTION<br>BETWEEN ORGANIZATIONS, THEIR OBJECTIVES AND THE DEVELOPMENT OF HUMAN<br>RESOURCES. EMPHASIS WILL BE GIVEN TO THE NOTIONS OF ORGANIZATION<br>ANALYSIS AND DESIGN, AND ON THE ANALYSIS OF THE EFFECTS OF<br>ORGANIZATIONAL STRUCTURE ON HUMAN PERFORMANCE.<br>MR. BOROSCHECK, MS. TOWN, STAFF                                        | 3 CREDITS |
| MGT  | 351 | HUMAN RESOURCES MANAGEMENT II<br>THIS CORE COURSE WILL EXPOSE STUDENTS TO THE THEORIES, IDEAS AND<br>RESEARCH CONCERNING HUMAN BEHAVIOR IN ORGANIZATIONS. IT HAS<br>BEEN STRUCTURED AS AN EXPERIENTIAL LEARNING PROCESS AROUND<br>THE ANALYSIS OF: A) INDIVIDUAL BEHAVIOR, B) INTERPERSONAL<br>RELATIONS AND C) GROUP DYNAMICS, FROM A MANAGEMENT POINT OF VIEW.<br>STUDENTS WILL BE EXPOSED TO THE CRITICAL INTERACTIONS AND OPTIONS<br>OPEN TO MANAGEMENT IN STRUCTURING HUMAN PERFORMANCE AND TO THE VALUE<br>IMPLICATIONS IMPLICIT IN PERSONNEL DECISIONS.<br>PREREQUISITE: MGT 350 OR PERMISSION OF INSTRUCTOR<br>MR. BOROSCHECK, MS. TOWN, STAFF                                                                                                 | 3 CREDITS |
| MGT  | 420 | MATHEMATICAL MODELS OF MANAGEMENT SYSTEMS I<br>USER ORIENTED OVERVIEW OF LINEAR DETERMINISTIC OPTIMIZATION<br>TECHNIQUES AS APPLIED TO MANAGERIAL PROBLEMS. THE STUDENTS<br>WILL BE RESPONSIBLE FOR CONSTRUCTION OF THE MODELS, COMPUTER<br>PROCESSING OF THE INFORMATION, AND INTERPRETATION OF THE<br>RESULTS. THE CONTENT INCLUDES LINEAR PROGRAMMING FORMULATION,<br>SENSITIVITY ANALYSIS, DUALITY, TRANSPORTATION AND ASSIGNMENT<br>MODELS, SHORTEST ROUTE AND OTHER NETWORK MODELS, AND DYNAMIC<br>AND INTEGER PROGRAMMING.<br>PREREQUISITE: MGT 321, OR MGT 320 WITH MGT 321 TAKEN<br>CONCURRENTLY<br>MR. ERIKSEN                                                                                                                               | 3 CREDITS |
| MGT  | 421 | MATHEMATICAL MODELS OF MANAGEMENT SYSTEMS II<br>USER ORIENTED OVERVIEW OF PROBABILISTIC MODELING TECHNIQUES<br>AS APPLIED TO MANAGERIAL PROBLEMS. THE STUDENTS WILL BE RESPONSIBLE<br>FOR THE CONSTRUCTION OF THE MODELS, COMPUTER PROCESSING OF THE<br>INFORMATION, AND INTERPRETATION OF THE RESULTS. THE CONTENT<br>INCLUDES STOCHASTIC PROGRAMMING, PROBABILISTIC DYNAMIC                                                                                                                                                                                                                                                                                                                                                                          | 3 CREDITS |



|     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
|-----|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| MGT | 434 | MANAGEMENT OF PUBLIC POLICY<br>THIS COURSE EXAMINES THE ROLE OF PUBLIC ADMINISTRATORS IN THE DESIGN AND IMPLEMENTATION OF PUBLIC POLICY. IT DEALS WITH THE TECHNICAL, POLITICAL, AND SOCIAL ISSUES INVOLVED IN MANAGING FEDERAL, STATE, AND LOCAL UNITS OF GOVERNMENT. CONSIDERING PUBLIC ADMINISTRATION AS A PROFESSION AS WELL AS AN ACADEMIC SUBJECT, THE COURSE COVERS THE NEED FOR AND HISTORICAL DEVELOPMENT OF PUBLIC ADMINISTRATION, THE PROBLEMS OF MANAGERIAL DECISION MAKING AND ETHICS IN GOVERNMENT, CRUCIAL ASPECTS OF THE PUBLIC BUDGETING AND PERSONNEL PROCESSES, AND THE FUTURE OF PUBLIC ADMINISTRATION.<br><br>STAFF<br><br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| MGT | 435 | PROGRAM PLANNING AND EVALUATION<br>THIS COURSE DEALS WITH HOW MANAGERS PLAN PROGRAMMATIC OBJECTIVES AND EVALUATE THE ATTAINMENT OF THE OBJECTIVES. IT DISCUSSES NOT ONLY THE TECHNIQUES OF PLANNING AND EVALUATION BUT ALSO THE POLITICAL AND ORGANIZATIONAL ENVIRONMENTS IN WHICH THESE TECHNIQUES ARE EXECUTED. TOPICS COVERED INCLUDE THE DETERMINATION OF PERFORMANCE CRITERIA AND STANDARDS, CHOICE OF RESEARCH DESIGN AND INSTRUMENTS, PRESENTATION OF EVALUATION DATA AND REPORTS, AND THE UTILIZATION OF EVALUATION RESULTS TO IMPROVE ORGANIZATIONAL EFFICIENCY AND EFFECTIVENESS.<br><br>POLICY ANALYSIS: PHYSICAL DELIVERY SYSTEMS<br>THIS COURSE EXAMINES THE USE OF THE TOOLS OF POLICY ANALYSIS IN THE DELIVERY OF PHYSICAL SYSTEMS SUCH AS HOUSING, TRANSPORTATION, UTILITIES. THE PLANNING, IMPLEMENTATION, EVALUATION, AND CONTROL OF PHYSICAL DELIVERY SYSTEMS AND THEIR IMPACT ON LAND USE AND THE QUALITY OF LIFE IS THE MAJOR STRESS OF THE COURSE. THE PURPOSE OF THE COURSE IS TO ENABLE STUDENTS TO APPRECIATE AND UNDERSTAND THE TOOLS OF ANALYSIS IN THE DELIVERY OF PUBLIC SECTOR PROGRAMS.<br>PREREQUISITE: MGT 330, 331 435 OR PERMISSION OF INSTRUCTOR.<br>STAFF<br><br>3 CREDITS |  |
| MGT | 436 | POLICY ANALYSIS: SOCIAL DELIVERY SYSTEMS<br>THIS COURSE EXAMINES THE USE OF THE TOOLS OF POLICY ANALYSIS IN THE DELIVERY OF SOCIAL SYSTEMS SUCH AS HEALTH, EDUCATION, WELFARE, CRIMINAL JUSTICE. THE PLANNING, IMPLEMENTATION, EVALUATION, AND CONTROL OF SOCIAL DELIVERY SYSTEMS AND THEIR IMPACT ON THE TOTAL WELL BEING OF THE TARGET POPULATIONS IS THE MAJOR STRESS OF THE COURSE. THE PURPOSE OF THE COURSE IS TO ENABLE STUDENTS TO APPRECIATE AND UNDERSTAND THE TOOLS OF ANALYSIS IN THE DELIVERY OF PUBLIC SECTOR PROGRAMS.<br>PREREQUISITE: MGT 435 OR PERMISSION OF INSTRUCTOR<br>STAFF<br><br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
| MGT | 437 | PUBLIC BUDGETING SYSTEMS<br>THIS COURSE EXAMINES PUBLIC BUDGETING AT THE FEDERAL, STATE AND LOCAL LEVELS. ITS EMPHASIS IS ON HOW THE PUBLIC MANAGER USES BUDGETING IN THE PLANNING, EVALUATION, AND CONTROL OF PUBLIC PROGRAMS. TOPICS COVERED INCLUDE THE BUDGET PROCESS, EMPHASIZING THE RECENT FEDERAL REFORMS, THE TOOLS OF ANALYSIS USED IN PUBLIC BUDGETING, THE APPLICATIONS OF PROGRAM BASED BUDGETING SYSTEMS AT THE FEDERAL, STATE, AND LOCAL LEVEL, AND THE FUTURE DIRECTIONS FOR PUBLIC BUDGETING.<br>PREREQUISITE: MGT 330, 331 OR PERMISSION OF INSTRUCTOR<br>STAFF<br><br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
| MGT | 441 | FINANCIAL MANAGEMENT OF GOVERNMENTAL ENTITIES<br>PRINCIPLES AND PROCEDURES IN ORGANIZATION AND INFORMATION RESOURCES FOR THE DAY TO DAY MANAGEMENT OF THE FINANCIAL RESOURCES OF GOVERNMENTAL UNITS WHERE THE TEST OF PROFITABILITY MUST BE REPLACED BY OTHER STANDARDS, BUILDS ON MATERIAL PRESENTED IN MGT 440.<br>PREREQUISITE: MGT 341, MGT 440<br>STAFF<br><br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| MGT | 442 | COST AND MANAGEMENT ACCOUNTING<br>STUDY OF THE COSTS OF OPERATIONS OF ALL TYPES OF ENTITIES WITH PARTICULAR ATTENTION TO THE ALLOCATION OF VARIABLE AND JOINT COSTS. EXAMINATION OF THE USE OF COST DATA BOTH BY MANAGERS WITHIN ENTITIES AND BY THOSE WHO NEGOTIATE ABOUT OR REGULATE COSTS AND PRICING.<br>PREREQUISITE: MGT 340, OR PERMISSION OF INSTRUCTOR<br>MR. OLENICK<br><br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| MGT | 443 | FINANCIAL ANALYSIS FOR LENDERS AND INVESTORS<br>STUDY OF THE FINANCIAL REPORTS OF ENTITIES OF ALL KINDS FROM THE VIEWPOINT OF AN OUTSIDER WHO CONSIDERS MAKING FUNDS AVAILABLE TO THE ENTITY. INCLUDES A REVIEW OF THE DISCLOSURE AND ACCOUNTING STANDARDS REQUIRED BY PROFESSIONAL AND GOVERNMENTAL BODIES.<br>PREREQUISITE: MGT 340, 341<br>STAFF<br><br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
| MGT | 444 | THE THEORY OF BUSINESS FINANCE<br>PRESENTATION OF THE DEVELOPMENTS OF THE THEORY OF VALUE WHICH MAKE POSSIBLE APPLICATIONS TO THE STRATEGIC PROBLEMS OF MANAGEMENT IN THE AREA OF BUSINESS FINANCE.<br>PREREQUISITE: MGT 341<br>STAFF<br><br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
| MGT | 445 | ISSUES IN FINANCIAL ACCOUNTING<br>BUILDING ON THE ABILITIES GAINED IN THE CORE COURSE, EXTENDS THE STUDY OF FINANCIAL ACCOUNTING PARTICULARLY IN THE AREAS OF THE DETERMINATION OF INCOME. EXPLORES THE ISSUES IN THE AREA OF PRICE-LEVEL ADJUSTMENT.<br>PREREQUISITE: MGT 240 OR 340 AND 341; MGT 443 IS RECOMMENDED<br>MR. OLENICK<br><br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| MGT | 446 | SPECIAL PROBLEMS OF SMALL BUSINESS<br>THE FORMATION AND MANAGEMENT OF SMALL ORGANIZATIONS, PROFIT AND NON-PROFIT TYPICALLY WITH PERSONNEL OF UNDER 100. THE COURSE WILL EMPHASIZE THE ANALYTICAL TOOLS AND MANAGEMENT CONCEPTS WHICH CAN BE EFFECTIVELY USED BY SMALLER ORGANIZATIONS AND WILL TREAT PROBLEMS OF PERSONNEL AND ORGANIZATIONS, FINANCING, MARKETING. MATERIAL WILL DEAL WITH PROBLEMS FINDING OPPORTUNITIES, APPRAISING POTENTIAL FOR SUCCESS, NEGOTIATING PRICE AND TERMS FOR FUNDING OR PURCHASE, RAISING CAPITAL AND WITH OPERATING PROBLEMS AT VARIOUS STAGES OF THE LIFE CYCLE OF SMALL ENTERPRISE. MATERIAL WILL CONSIST OF CASE STUDIES, SELECTED READINGS AND OCCASIONAL INVITED GUESTS.<br>PREREQUISITE: MGT 340, 341 OR PERMISSION OF INSTRUCTOR<br>MR. LYKEN<br><br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| MGT | 450 | BEHAVIORAL TECHNIQUES IN HUMAN RESOURCES MANAGEMENT<br>A SEMINAR DIRECTED PRIMARILY TO THE DEVELOPMENT OF BASIC SKILLS AND RESEARCH TECHNIQUES COMMON TO THE FIELDS OF PERSONNEL AND LABOR RELATIONS. IT WILL PROVIDE KNOWLEDGE AND INFORMATION ON THOSE ASPECTS OF RESEARCH METHODOLOGY REQUIRED FOR EFFECTIVE ROLE DEVELOPMENT IN PERSONNEL AND LABOR RELATIONS. REQUIRED FOR ALL MANAGEMENT MAJORS CONCENTRATING IN THE HUMAN RESOURCES AREA.<br>PREREQUISITE: MGT 350, 351 OR PERMISSION OF INSTRUCTOR<br>STAFF<br><br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
| MGT | 451 | ORGANIZATION DEVELOPMENT<br>A SEMINAR CENTERED ON DIAGNOSTIC TECHNIQUES, CHANGE PROCESSES AND MANAGERIAL INTERVENTION TECHNIQUES AS APPLIED TO A VARIETY OF HUMAN GROUPINGS WITHIN FORMAL ORGANIZATIONS. REQUIRED FOR ALL MANAGEMENT MAJORS CONCENTRATING IN THE HUMAN RESOURCES AREA.<br>PREREQUISITE: MGT 350, 351 OR PERMISSION OF INSTRUCTOR<br>MS. TONY STAFF<br><br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
| MGT | 452 | PRIVATE SECTOR PERSONNEL SYSTEMS<br>AN OPERATIONAL APPROACH TO THE MANAGEMENT OF HUMAN RESOURCES IN PRIVATE-FOR-PROFIT ORGANIZATIONS, EMPHASIS WILL BE GIVEN TO THE TECHNIQUES OF MANPOWER PLANNING IN THE FIRM WITH PARTICULAR ATTENTION BEING DEVOTED TO THE ISSUES OF MANPOWER FORECASTING, RECRUITMENT AND SELECTION, MANPOWER UTILIZATION AND DEVELOPMENT, PERFORMANCE RATINGS, OCCUPATIONAL MOBILITY, COMPENSATION SYSTEMS, INCENTIVE SYSTEMS DESIGN AND PERSONNEL DEPARTMENT DESIGN AND MANAGEMENT.<br>PREREQUISITE: MGT 450, 451 OR PERMISSION OF INSTRUCTOR<br>STAFF<br><br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |

All Mathematics majors graduating after August 31, 1976, are required to take: Math 140, Math 141, Phys 113 (Lab optional) Math 150, Math 240; Math 260 Math 310, or Math 320, Math 360, Math 430, and four other Mathematics courses above Math 260.

All Mathematics majors graduating on or before August 31, 1976, have the option of meeting the set of requirements of or following the old set, viz.: "Math 140, Math 141, Phys 113 (lab optional), Math 150, Math 240, Math 255 or Math 258 (both of which are no longer offered here, cf. previous catalogues for descriptions), Math 320, Math 360 and six other Mathematics courses above Math 258."

## GRADUATE PROGRAM

A complete description of the graduate program in Mathematics appears in a section on graduate programs at the end of this catalog.

100 MATHEMATICS AS AN ASPECT OF CULTURE  
AN HISTORICAL-CULTURAL SURVEY OF THE MAIN AREAS OF MATHEMATICS.  
EMPHASIZES THE INTERPLAY OF THESE AREAS WITH MAN'S PHILOSOPHIC,  
ARTISTIC, COMMERCIAL, SOCIAL AND SCIENTIFIC PURSUITS.  
PREREQUISITE: PERMISSION OF DEPARTMENT PRIOR TO REGISTRATION. LIMITED  
TO THOSE WHO FOUND HIGH SCHOOL MATHEMATICS A SEVERE STUMBLING  
BLOCK AND WHOSE MAJOR DOES NOT DIRECTLY CALL  
FOR FURTHER MATHEMATICAL SKILLS

3 LECT HRS  
STAFF 4 CREDITS

MATH 105 INTRODUCTION TO COMPUTER CONCEPTS: HISTORICAL AND RECENT DEVELOPMENTS; COMPUTER PROCESSING EQUIPMENT AND ITS USES; COMPUTER LANGUAGE; DISCUSSION OF COMPUTER APPLICATIONS, COMPONENTS AND TERMINOLOGY. 3 LECT HAS 4 CREDITS  
STAFF

MATH 110 BASIC MATH AND COLLEGE ALGEBRA  
FOR STUDENTS WITH WEAK MATH BACKGROUND WHO WANT TO DEVELOP SKILLS  
FOR FURTHER MATH AND SCIENCE COURSES. COVERS A REVIEW OF BASIC HIGH  
SCHOOL MATH AND SOME OF THE MATERIAL IN MATH 130. GENERALLY LIMITED  
TO STUDENTS WITH LESS THAN 3 YEARS OF HIGH SCHOOL MATH PREPARATION.  
3 LECT HRS 6 CREDITS  
STAFF

**MATH**

**120 LIBERAL ARTS MATHEMATICS.** DESIGNED FOR STUDENTS WHO DO NOT EXPECT TO TAKE MANY MATHEMATICS AND/OR SCIENCE COURSES. AIMS AT PROVIDING AN APPRECIATION OF THE NATURE OF MATHEMATICS. TOPICS SERVING THAT END ARE SELECTED FROM NUMBER THEORY, ELEMENTARY TOPOLOGY, COMBINATORICS, ETC. THIS COURSE IS NOT A PREREQUISITE FOR OTHER COURSES AND IT HAS NO OTHER COLLEGE MATHEMATICS COURSES AS A PREREQUISITE.

3 LECT HRS      4 CREDITS  
STAFF

|      |     |                                                                                                                                                                                                                                                                                                                                              |           |
|------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| MATH | 125 | ELEMENTARY PROBABILITY THEORY<br>FOR NON-SCIENCE AND NON-MATHEMATICS MAJORS. TOPICS INCLUDE -<br>ELEMENTARY SET THEORY, COMBINATIONS, PERMUTATIONS AND OTHER<br>COUNTING FORMULAS, FINITE PROBABILITY THEORY, RANDOM VARIABLES<br>AND THEIR DISTRIBUTIONS. SERVES AS PREPARATION FOR MATH 126<br>OR STATISTICS COURSES IN OTHER DEPARTMENTS. | 4 CREDITS |
|      |     | 3 LEFT HRS                                                                                                                                                                                                                                                                                                                                   |           |
|      |     | STAFF                                                                                                                                                                                                                                                                                                                                        |           |

MATH 126 ELEMENTARY STATISTICS  
STATISTICS WITHOUT CALCULUS. BEGINS WITH BRIEF REVIEW OF ELEMENTARY PROBABILITY, FINITE DISTRIBUTIONS AND PROBABILITY DENSITY FUNCTIONS. COMPUTATION OF ELEMENTARY ANALYSIS OF VARIANCE AND REGRESSION. EXPECTATION, CONFIDENCE INTERVALS AND A FEW DISTRIBUTION-FREE NON-PARAMETRIC METHODS OF DATA ANALYSIS.  
PREREQUISITE: MATH 125  
3 LECT HWS 4 CREDITS  
STAFF

**453** PRIVATE SECTOR LABOR RELATIONS SYSTEMS  
EXPLORES THE NATURE, DEVELOPMENT AND CURRENT PROBLEMS OF UNION-  
MANAGEMENT RELATIONS IN THE PRIVATE SECTOR. ATTENTION IS FOCUSED  
ON TECHNIQUES RELATED TO FACT FINDING, MEDIATION, ARBITRATION,  
CONTRACT NEGOTIATION AND THE RESOLUTION OF EMPLOYEE GRIEVANCES.  
IT STRESSES THE OPERATION OF LABOR MARKETS AND LABOR FORCES ANALYSIS  
AND THE IMPACT OF UNEMPLOYMENT AND TECHNOLOGICAL CHANGE ON THE  
NATURE OF LABOR RELATIONS IN THE PRIVATE SECTOR.  
PREREQUISITE: MGT 450, 451 OR PERMISSION OF INSTRUCTOR  
STAFF

454  
PUB-100 PUBLIC SECTOR PERSONNEL SYSTEMS  
THIS COURSE EXPLORES THE PERSONNEL PROCESS THROUGH THE LIGHT OF THE  
UNIQUE ASPECTS OF "PUBLIC" EMPLOYMENT. IT EXAMINES THE ROLE OF THE  
PUBLIC PERSONNEL MANAGER AND THE NATURE OF THE LEGAL, INSTITUTIONAL  
AND SOCIO-PSYCHOLOGICAL FORCES THAT SHAPE THAT ROLE. IT WILL IN  
ADDITION TO THE TRADITIONAL AREAS OF PERSONNEL MANAGEMENT, PROVIDE  
A COMPREHENSIVE REVIEW OF THE NATURE OF THE CIVIL SERVICE SYSTEM AND  
OF THE PROGRAMS AND PROBLEMS RELATED TO ITS IMPLEMENTATION.  
PREREQUISITE: MG 450, 451 OR PERMISSION OF INSTRUCTOR  
CREDITS: 3

435 PUBLIC SECTOR LABOR RELATIONS  
THIS COURSE ANALYZES THE NATURE AND DEVELOPMENT OF PUBLIC EMPLOYEES  
ORGANIZATIONS AND LABOR RELATIONS AT VARIOUS GOVERNMENTAL LEVELS,  
AND THE NATURE OF THE BARGAINING, MEDIATION AND CONTRACT ADMINISTRATION  
PROCESSES IN THE PUBLIC SECTOR. EMPHASIS WILL BE GIVEN ALSO TO THE  
INTERFACE BETWEEN POLITICAL SYSTEMS AND THE NATURE OF PUBLIC  
EMPLOYMENT. THE ROLE OF THE GOVERNMENT IN COLLECTIVE BARGAINING  
WILL BE ANALYZED AS WELL AS THE FORCES SHAPING PUBLIC POLICY IN  
LEGISLATIVE AND EXECUTIVE ACTIONS AND ADMINISTRATIVE RULINGS.  
STAFF 3 CREDITS

460 MANAGEMENT INFORMATION SYSTEMS AND CONTROLS

STUDY OF MANAGEMENT'S NEED FOR INFORMATION FOLLOWED BY DESIGN OF SYSTEMS TO PROVIDE THE QUANTITATIVE PARTS OF THAT INFORMATION, DRAWING ON DATA FROM ACCOUNTING RECORDS, INTERNAL STATISTICS AND OTHER SOURCES. INCLUDES EXAMINATION OF HOW SUCH INFORMATION IS USED THROUGH BUDGETS AND THE REVIEW OF PERFORMANCE.

3 CREDITS

|     |                                                                                                                                                                         |             |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 472 | INDEPENDENT STUDY                                                                                                                                                       | 1-4 CREDITS |
|     | STUDENT INITIATED RESEARCH PROJECT ON A MANAGEMENT TOPIC, SUPERVISED BY A MEMBER OF THE MANAGEMENT PROGRAM FACULTY. OPEN TO A LIMITED NUMBER OF STUDENTS EACH SEMESTER. |             |
|     | STAFF                                                                                                                                                                   |             |

480 MANAGEMENT INTERNSHIP  
FULL OR PART TIME WORK EXPERIENCE IN A MANAGEMENT SETTING, SUPERVISED  
BY AN ON-SITE SPONSOR AND A MANAGEMENT PROGRAM FACULTY SPONSOR. OPEN  
ONLY TO MANAGEMENT MAJORS WHO HAVE COMPLETED 40 CREDITS  
4-8 CREDITS

500 EXCHANGE PROGRAM WITH NORTHEASTERN UNIVERSITY. STUDENTS ENROLLED IN THE MANAGEMENT PROGRAM MAY, WITH THE APPROVAL OF THE DEAN OF THE COLLEGE OF PROFESSIONAL STUDIES, TAKE SPECIALIZED COURSE WORK NOT AVAILABLE AT THE UNIVERSITY OF MASSACHUSETTS/BOSTON AT THE COLLEGE OF BUSINESS ADMINISTRATION AT NORTHEASTERN UNIVERSITY. STUDENTS INTERESTED IN THIS OPTION SHOULD CONSULT WITH MS. WATSON IN THE COLLEGE OF PROFESSIONAL STUDIES - DEAN'S OFFICE. PRIORITY WILL BE GIVEN TO MANAGEMENT MAJORS.

MATHEMATICS

### Graduation Requirements

The Mathematics department is contemplating expanding this requirement to allow students to follow either a pure or an applied mathematics concentration. Confer with the Mathematics department for details.



|      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                          |           |
|------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------|
| MATH | 130 | COLLEGE ALGEBRA AND TRIGONOMETRY PROVIDES A REVIEW OF COLLEGE ALGEBRA, TRIGONOMETRY AND ENOUGH ANALYTIC GEOMETRY TO BEGIN THE CALCULUS SEQUENCE. FOR STUDENTS WITH ADEQUATE BASIC MATH SKILLS WHO NEED TO REVIEW AND EXTEND THEIR KNOWLEDGE OF ALGEBRA, ETC., BEFORE TAKING MORE ADVANCED COURSES IN MATH OR SCIENCE. ORDINARILY SCIENCE AND MATH MAJORS SHOULD BEGIN WITH MATH 140 AND/OR MATH 150. (IN CERTAIN CASES AND WITH THE PERMISSION OF BOTH INSTRUCTORS, A STUDENT WHO HAS COMPLETED MATH 110 MAY TAKE MATH 130 FOR CREDIT.) | 3 LECT HRS<br>STAFF      | 4 CREDITS |
| MATH | 135 | SURVEY OF CALCULUS DEVELOPED INTUITIVELY AND APPLIED TO PROBLEMS IN BIOLOGY, ECONOMICS, PSYCHOLOGY AND GEOMETRY. A COURSE FOR NON-PHYSICAL SCIENCE AND NON-MATHEMATICS MAJORS. (MATH 136 OR MATH 141)                                                                                                                                                                                                                                                                                                                                   | 3 LECT HRS<br>STAFF      | 4 CREDITS |
| MATH | 136 | APPLIED CALCULUS WITH STATISTICS. CALCULUS FOR FUNCTIONS OF TWO VARIABLES - PARTIAL DERIVATIVES, MAXIMIZATIONS, INTEGRATION. APPLICATIONS OF CALCULUS TO INFERENCE STATISTICS: STATISTICAL SAMPLING, STATISTICAL MEASUREMENTS, ESSENTIAL PROBABILITY THEORY, SIGNIFICANCE OF STATISTICAL MEASUREMENTS, REGRESSIONAL EXAMPLES FROM THE BIOLOGICAL AND SOCIAL SCIENCES. FOR NON-MATHEMATICS MAJORS ONLY. MATH 126 AND MATH 136 MAY NOT BOTH BE TAKEN FOR CREDIT. PREREQUISITE: MATH 135 (SURVEY OF CALCULUS) OR EQUIVALENT                | 3 LECT HRS<br>STAFF      | 4 CREDITS |
| MATH | 137 | INTRODUCTION TO MATHEMATICAL COMPUTER PROGRAMMING A DETAILED INTRODUCTION TO ALGORITHMS AND PROBLEM-SOLVING TECHNIQUES. DESCRIPTION OF ONE OR MORE ALGEBRAIC LANGUAGES. GIVES EXPERIENCE IN PROGRAMMING AND DEBUGGING VIA SEVERAL PROBLEMS. PREREQUISITE: MATH 130 OR EQUIVALENT                                                                                                                                                                                                                                                        | 3 LECT HRS<br>STAFF      | 4 CREDITS |
| MATH | 140 | CALCULUS I THE FIRST IN THE CALCULUS SEQUENCE OF COURSES FOR SCIENCE AND MATHEMATICS MAJORS. STARTS WITH THE BASIC CONCEPTS OF FUNCTIONS AND LIMITS. TOPICS COVERED INCLUDE: DERIVATIVES AND THEIR APPLICATIONS, DEFINITE AND INDEFINITE INTEGRALS WITH APPLICATIONS TO GEOMETRICAL AND PHYSICAL PROBLEMS, DISCUSSION OF ALGEBRAIC AND TRANSCENDENTAL FUNCTIONS. A STUDENT WHO HAS RECEIVED CREDIT FOR MATH 135 MAY NOT TAKE MATH 140 FOR CREDIT WITHOUT THE EXPLICIT PERMISSION OF THE DEPARTMENT                                      | 4 LECT HRS<br>STAFF      | 4 CREDITS |
| MATH | 141 | CALCULUS II CONTINUATION OF MATH 140. TOPICS INCLUDE: INTEGRATION, APPLICATIONS OF THE INTEGRAL, SEQUENCES AND SERIES. PREREQUISITE: MATH 140 OR EQUIVALENT                                                                                                                                                                                                                                                                                                                                                                             | 4 LECT HRS<br>STAFF      | 4 CREDITS |
| MATH | 150 | VECTOR GEOMETRY AND MATRICES PLANAR AND SOLID ANALYTIC GEOMETRY FROM THE VECTOR-SPACE POINT OF VIEW. ELEMENTARY LINEAR SYSTEMS OF EQUATIONS. ELEMENTARY OPERATIONS FOR $2 \times 2$ AND $3 \times 3$ MATRICES OVER $\mathbb{R}$ , DETERMINANTS. PREREQUISITE: MATH 130 OR EQUIVALENT                                                                                                                                                                                                                                                    | 3 LECT HRS<br>STAFF      | 3 CREDITS |
| MATH | 240 | CALCULUS III                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                          |           |
| MATH | 260 | LINEAR ALGEBRA I ELEMENTARY THEORY OF ABSTRACT VECTOR SPACES. TOPICS INCLUDE: LINEAR INDEPENDENCE, RANKS, DIMENSION, LINEAR MAPS AND MATRICES, DETERMINANTS, SIMILARITY, EIGENVALUES AND EIGENVECTORS. PREREQUISITE: MATH 141 AND MATH 150. MATH 240 IS ADVISORY PREPARATION FOR MATH 260. FOR HUT MAY BE TAKEN ALONG WITH MATH 260.                                                                                                                                                                                                    | 3 LECT HRS<br>STAFF      | 4 CREDITS |
| MATH | 261 | LINEAR ALGEBRA II TOPICS INCLUDE - THE PROBLEM OF SIMILARITY, JORDAN CANONICAL FORM, EUCLIDEAN AND HERMITIAN SPACES, ORTHOGONALITY, NORMAL OPERATORS, SPECTRAL THEOREM: MULTILINEAR ALGEBRA, QUADRATIC FORMS, ETC.                                                                                                                                                                                                                                                                                                                      | 3 LECT HRS<br>STAFF      | 3 CREDITS |
| MATH | 267 | COMPUTER PROGRAMMING II THE STRUCTURE AND INTERNAL LANGUAGE OF COMPUTERS. STUDY OF ASSEMBLY LANGUAGE. PREREQUISITE: MATH 137 OR EQUIVALENT                                                                                                                                                                                                                                                                                                                                                                                              | 3 LECT HRS<br>MR. MILLER | 4 CREDITS |
| MATH | 310 | APPLIED ORDINARY DIFFERENTIAL EQUATIONS COMPREHENSIVE STUDY OF ORDINARY DIFFERENTIAL EQUATIONS, SERIES SOLUTIONS TO DIFFERENTIAL EQUATIONS, BESSEL FUNCTIONS, CHARACTERISTIC FUNCTIONS, FOURIER SERIES. MAY NOT BE TAKEN FOR CREDIT BY ANYONE WHO HAS TAKEN MATH 255 OR ITS EQUIVALENT. PREREQUISITE: MATH 141 AND EITHER MATH 150 OR PHYSICS 114                                                                                                                                                                                       | 3 LECT HRS<br>STAFF      | 3 CREDITS |
| MATH | 311 | APPLIED PARTIAL DIFFERENTIAL EQUATIONS STUDY OF HEAT FLOW AND OTHER PHYSICAL PROBLEMS AND THE PARTIAL DIFFERENTIAL EQUATION PROBLEMS THAT ARISE FROM THEM. USING THE MATHEMATICAL TECHNIQUES OF SEPARATION OF VARIABLES, FUNDAMENTAL SOLUTIONS, SUPERPOSITION AND CHARACTERISTICS. USE OF DIRAC DELTA FUNCTION; ASYMPTOTICS. CLASSIFICATION OF PARTIAL DIFFERENTIAL EQUATIONS. PREREQUISITE: MATH 240, 310, PHY 113 (LAB OPTIONAL) COREQUISITE                                                                                          | 3 LECT HRS<br>STAFF      | 3 CREDITS |
| MATH | 320 | ADVANCED CALCULUS I PARTIAL DERIVATIVES, DIFFERENTIALS, DIFFERENTIATION OF COMPOSITE FUNCTIONS, INVERSES OF TRANSFORMATIONS, JACOBIANS, IMPLICIT FUNCTION THEOREMS, FUNCTIONAL DEPENDENCE, GRADIENT, DIVERGENCE, CURL, MULTIPLE INTEGRATION, CHANGE OF VARIABLE, IMPROPER DOUBLE INTEGRALS, LINE INTEGRALS, GREEN'S THEOREM, SIMPLY-CONNECTED AND MULTIPLY-CONNECTED DOMAINS, SURFACE INTEGRALS, STOKES' AND GAUSS' THEOREMS. PREREQUISITE: MATH 240                                                                                    | 3 LECT HRS<br>STAFF      | 3 CREDITS |
| MATH | 321 | ADVANCED CALCULUS II CONVERGENCE AND DIVERGENCE OF INFINITE SERIES, TAYLOR SERIES, UNIFORM CONVERGENCE OF SERIES, FOURIER SERIES AND ORTHOGONAL FUNCTIONS, INTRODUCTION TO INTEGRAL TRANSFORMS, INTRODUCTION TO COMPLEX ANALYSIS. PREREQUISITE: MATH 320                                                                                                                                                                                                                                                                                | 3 LECT HRS<br>STAFF      | 3 CREDITS |



- MATH 330 APPLIED DISCRETE MATHEMATICS  
STUDY OF THE BASIC DISCRETE MATHEMATICAL STRUCTURES OF GRAPHS, NETWORKS, TREES USE OF RECURRENCE RELATIONS, INTRODUCTIONS TO LINEAR PROGRAMMING.  
PREREQUISITE: MATH 141, 150. MATH 137, 260 ARE RECOMMENDED.  
3 LECT HRS  
STAFF  
3 CREDITS
- MATH 360 ABSTRACT ALGEBRA I  
REVIEW OF SET THEORY, OVERVIEW OF ALGEBRAIC STRUCTURE, ELEMENTARY THEORY OF GROUPS, RINGS AND MODULES.  
PREREQUISITE: MATH 240 OR EQUIVALENT  
3 LECT HRS  
STAFF  
3 CREDITS
- MATH 361 ABSTRACT ALGEBRA II  
POLYNOMIAL RINGS, FIELD THEORY, GALOIS THEORY, FURTHER TOPICS IN GROUP AND RING THEORY.  
PREREQUISITE: MATH 360  
3 LECT HRS  
STAFF  
3 CREDITS
- MATH 370 HISTORY OF MATHEMATICS I  
TRADES THE DEVELOPMENT OF MATHEMATICS FROM ANCIENT TIMES TO AND INCLUDING THE DEVELOPMENT OF CALCULUS. EMPHASIS WILL BE ON THE DEVELOPMENT OF MATHEMATICAL IDEAS AND METHODS OF PROBLEM SOLVING. ONLY ONE SEMESTER OF MATH 370-371 MAY COUNT TOWARDS THE MAJOR, BUT BOTH MAY BE TAKEN FOR GRADUATION CREDIT.  
PREREQUISITE: AT LEAST JUNIOR STANDING  
3 LECT HRS  
STAFF  
(OFFERED EVERY OTHER YEAR)  
(OFFERED IN FALL 1977)  
3 CREDITS
- MATH 371 HISTORY OF MATHEMATICS II  
CONTINUES THE HISTORY OF MATH FROM THE DEVELOPMENT OF CALCULUS TO THE 20TH CENTURY WITH SAME EMPHASIS AS IN MATH 370. ONLY ONE SEMESTER OF MATH 370-371 MAY COUNT TOWARDS THE MAJOR BUT BOTH MAY BE TAKEN FOR GRADUATION CREDIT.  
PREREQUISITE: AT LEAST JUNIOR STANDING. MATH 370 IS RECOMMENDED BUT IS NOT A STRICT PREREQUISITE.  
3 LECT HRS  
STAFF  
(OFFERED EVERY OTHER YEAR)  
(OFFERED IN SPRING 1978)  
3 CREDITS
- MATH 401 INTRODUCTION TO COMPUTER SCIENCE  
ANALYSIS OF ALGORITHMS AND TECHNIQUES FOR CONSTRUCTION OF COMPUTER PROGRAMS.  
PREREQUISITE: MATH 267 OR EQUIVALENT  
3 LECT HRS, 3 LAB HRS  
STAFF  
4 CREDITS
- MATH 425 NUMERICAL ANALYSIS  
APPROXIMATIONS OF ROOTS, FINITE DIFFERENCES, INTERPOLATION, NUMERICAL SOLUTIONS OF DIFFERENTIAL AND ALGEBRAIC EQUATIONS. STUDENTS WILL HAVE ACCESS TO COMPUTER TERMINALS.  
PREREQUISITE: MATH 310 WITH MATH 137 RECOMMENDED OR MATH 320  
3 LECT HRS  
STAFF  
3 CREDITS
- MATH 440 THEORY OF COMPUTATIONS  
ABSTRACT MODELS OF COMPUTATIONAL PROCESSES. MATHEMATICAL FORMULATIONS OF THE NATION OF EFFECTIVE PROCEDURE. UNSOLVABLE PROBLEMS.  
PREREQUISITE: MATH 240 OR EQUIVALENT  
3 LECT HRS  
STAFF  
3 CREDITS
- MATH 445 PROBABILITY AND STATISTICS I  
DISCRETE PROBABILITY THEORY, SOME LIMIT THEOREMS, RANDOM VARIABLES AND GENERATING FUNCTIONS.  
PREREQUISITE: MATH 310 OR MATH 320 OR EQUIVALENT  
3 LECT HRS  
STAFF  
3 CREDITS

- MATH 446 PROBABILITY AND STATISTICS II  
RENEWAL THEORY, APPLICATION OF RENEWAL THEORY, STOCHASTIC PROCESSES. ELEMENTARY THEORY OF CONTINUOUS RANDOM VARIABLES AND SOME STATISTICAL THEORY.  
PREREQUISITE: MATH 445  
3 LECT HRS  
STAFF  
3 CREDITS
- MATH 450 AN INTRODUCTION TO REAL ANALYSIS  
A THOROUGH TREATMENT OF CALCULUS OF FUNCTIONS OF ONE REAL VARIABLE. EMPHASIS IS ON PROOFS, INCLUDES DISCUSSION OF TOPOLOGY OF REAL LINE, LIMITS, CONTINUITY, DIFFERENTIATION, INTEGRATION AND SERIES.  
PREREQUISITE: MATH 310 OR MATH 320. (IF MATH 260 HAS ALREADY BEEN TAKEN, THEN EITHER OF THESE COURSES MAY BE A COREQUISITE.)  
3 LECT HRS  
STAFF  
3 CREDITS
- MATH 455 AN INTRODUCTION TO COMPLEX ANALYSIS  
COMPLEX NUMBERS, COMPLEX FUNCTIONS, POWER SERIES, TRIGONOMETRIC FUNCTIONS, MOEBIUS TRANSFORMATIONS, DIFFERENTIATION AND INTEGRATION OF ANALYTICAL FUNCTIONS, CAUCHY'S THEOREM, RESIDUES, SINGULARITIES, MEROMORPHIC FUNCTIONS.  
PREREQUISITE: MATH 310 OR MATH 320  
3 LECT HRS  
STAFF  
3 CREDITS
- MATH 458 THEORY OF NUMBERS  
PRIME NUMBERS, CONGRUENCES AND RESIDUES, APPROXIMATION OF REAL NUMBERS BY RATIONALS, DIOPHANTINE EQUATIONS.  
PREREQUISITE: MATH 260 OR EQUIVALENT  
3 LECT HRS  
STAFF  
3 CREDITS
- MATH 460 TOPICS IN GEOMETRY  
TOPICS IN CLASSICAL EUCLIDEAN AND NON-EUCLIDEAN GEOMETRIES. PROJECTIVE GEOMETRY, LATTICES, FINITE GEOMETRIES.  
PREREQUISITE: MATH 260 OR EQUIVALENT  
3 LECT HRS  
STAFF  
3 CREDITS
- MATH 465 DIFFERENTIAL GEOMETRY  
AN INTRODUCTION TO CLASSICAL DIFFERENTIAL GEOMETRY WITH CORRESPONDING MODERN ALGEBRAIC APPROACHES, LEADING TO AN INTRODUCTION TO RIEMANNIAN GEOMETRY. TECHNIQUES INVOLVE TENSOR ANALYSIS AND MULTILINEAR ALGEBRA.  
PREREQUISITE: MATH 320 AND MATH 260  
3 LECT HRS  
STAFF  
3 CREDITS
- MATH 470 MATHEMATICAL LOGIC I  
STATEMENT CALCULUS, PREDICATE CALCULUS, AXIOMATIC THEORIES, TRUTH AND VALIDITY MODELS.  
PREREQUISITE: MATH 240 OR EQUIVALENT  
3 LECT HRS  
STAFF  
3 CREDITS
- MATH 471 MATHEMATICAL LOGIC II  
PROPERTIES OF FORMAL THEORIES-CONSISTENCY, COMPLETENESS, DECIDABILITY, GOEDEL'S INCOMPLETENESS THEOREM FOR FIRST ORDER ARITHMETIC.  
PREREQUISITE: MATH 470  
3 LECT HRS  
STAFF  
3 CREDITS
- MATH 475 TOPOLOGY  
TOPOLOGICAL SPACES, CONVERGENCE AND COMPACTNESS AND CONNECTIONS PROPERTIES, INTRODUCTION TO HOMOTOPY THEORY AND COMBINATIONAL TOPOLOGY.  
PREREQUISITE: MATH 450  
3 LECT HRS  
STAFF  
3 CREDITS
- MATH 478 READING IN MATHEMATICS  
ADVANCED LEVEL STUDY OF VARIOUS TOPICS ACCORDING TO INDIVIDUAL

INTERESTS. OPEN ONLY TO THOSE STUDENTS WHO HAVE PROVEN CAPABILITIES IN MATHEMATICS.  
 PREREQUISITE: PERMISSION OF DEPARTMENT PRIOR TO REGISTRATION  
 MRS BY ARRANGEMENT  
 STAFF  
 3 CREDITS

MATH 586 CURRICULUM, METHODS AND PRACTICE. TEACHING OF MATHEMATICS IN SECONDARY SCHOOLS

THE ISSUES, PRINCIPLES, CURRICULUM AND METHODS INVOLVED IN TEACHING MATHEMATICS IN SECONDARY SCHOOLS. INCLUDING WORK IN A MATHEMATICAL - MATERIALS LABORATORY.  
 PREREQUISITE: 6 HOURS EDUCATION COURSES AND ADMISSION TO THE TEACHER CERTIFICATION PROGRAM  
 3 LECT HRS. 20 HRS PRACTICE TEACHING  
 STAFF  
 GIVEN USUALLY IN THE SPRING SEMESTER EACH YEAR  
 9 CREDITS

MUSIC

Graduation Requirements

Music majors must take a minimum of 34 credits in Music which must include Musics 121-122, 221-222, and 202. All Music majors will also be expected to take at least two courses in Music History and Literature.

All Music majors must acquire at least an elementary proficiency at the piano. A minimum of three years' membership in a University performing group is also required. For more detailed information, the prospective major should apply to the secretary of the Music department for the syllabus of basic music major requirements.

Each student majoring in Music will be assisted by a departmental advisor to plan a sequence of courses that will suit his/her own needs and satisfy the requirements of the Music department.

MUSIC 001 CHORUS  
 3 LECT HRS  
 STAFF  
 1 CREDIT

MUSIC 111 INTRODUCTION TO MUSIC  
 BASIC MUSIC MATERIALS, PRINCIPLES OF DESIGN, AND THE CULTURAL SIGNIFICANCE OF REPRESENTATIVE WORKS IN HISTORICAL SEQUENCE. DESIGNED PRIMARILY FOR NON-MUSIC MAJORS.  
 3 LECT HRS  
 MR. REPMAN, MR. PATTERSON  
 4 CREDITS

MUSIC 112 INTRODUCTION TO MUSIC  
 A CONTINUATION OF MUSIC 111. BASIC MATERIALS, PRINCIPLES OF DESIGN AND THE CULTURAL SIGNIFICANCE OF REPRESENTATIVE WORKS IN HISTORICAL SEQUENCE. DESIGNED PRIMARILY FOR NON-MUSIC MAJORS.  
 3 LECT HRS  
 MR. HUGGLER, MR. PATTERSON  
 4 CREDITS

MUSIC 121 FIRST YEAR THEORY  
 HARMONY, MELODY AND MUSIC THEORY.  
 PREREQUISITE: PERMISSION OF INSTRUCTOR  
 3 LECT HRS  
 MR. REPMAN, MS. LEAVENWORTH, MR. PATTERSON  
 4 CREDITS

MUSIC 122 FIRST YEAR THEORY  
 A CONTINUATION OF MUSIC 121. HARMONY, MELODY AND MUSIC THEORY.  
 PREREQUISITE: PERMISSION OF INSTRUCTOR  
 3 LECT HRS  
 MR. REPMAN, MS. LEAVENWORTH, MR. PATTERSON  
 4 CREDITS

MUSIC 123 EAR TRAINING AND SIGHT SINGING  
 A COURSE COMBINING MELODIC, HARMONIC DICTATION AND SIGHT SINGING OF MELODIES. ENCOMPASSING SIMPLE MATERIAL TO MEDIUM DIFFICULTY, COMMON AND COMPOUND TIME, PRIMARY TRIADS.  
 2 LECT HRS  
 MR. PRINS  
 2 CREDITS

MUSIC 124 EAR TRAINING AND SIGHT SINGING  
 ENCOMPASSING MEDIUM DIFFICULTY TO DIFFICULT MELODIES, COMBINED RHYTHMS, SECONDARY TRIADS AND SEVENTH CHORDS. THIS IS A COMPANION COURSE TO THEORY 121-122 AND ELEMENTS OF MUSIC 131-132.  
 2 LECT HRS  
 MR. PRINS  
 2 CREDITS

MUSIC 131 ELEMENTS OF MUSIC  
 THE FUNCTION OF SCALES, INTERVALS, TRIADS, CHORDS IN ROOT POSITION AND INVERSIONS. USE OF NONHARMONIC TONES AND MODULATION, CORRELATED SIGHT-SINGING, EAR TRAINING, DICTATION, ANALYSIS AND KEYBOARD DRILL. DESIGNED PRIMARILY FOR MUSIC MAJORS.  
 2 LECT HRS  
 2 CREDITS

MUSIC 132 ELEMENTS OF MUSIC  
 A CONTINUATION OF MUSIC 131. THE FUNCTION OF SCALES, INTERVALS, TRIADS, CHORDS IN ROOT POSITION AND INVERSIONS. USE OF NONHARMONIC TONES AND MODULATION, CORRELATED SIGHT-SINGING, EAR TRAINING, DICTATION, ANALYSIS AND KEYBOARD DRILL. DESIGNED PRIMARILY FOR MUSIC MAJORS.  
 2 LECT HRS  
 MS. LEAVENWORTH  
 2 CREDITS

MUSIC 140 MOVEMENT AND DANCE  
 AN INTRODUCTION TO THE BASIC PRINCIPLES AND TECHNIQUES OF MODERN DANCE AND MOVEMENT. CONCEPTS OF SPATIAL AND TEMPORAL RELATIONSHIPS DISCUSSED AT LENGTH FOR THE PURPOSE OF -TRANSLATION- INTO CONCRETE, EXPERIMENTAL IMAGES. CREATIVE WORK IS AN IMPORTANT ELEMENT OF THE COURSE. ASSIGNMENTS RUN THE GAMUT FROM STRICTLY TECHNICAL EXERCISES, SUCH AS ANALYZING AN ISOLATED MOVEMENT OR GESTURE, TO AN ESSAY IN FREE COMPOSITION, SUCH AS DEVISING AN EMBODIMENT THROUGH DANCE OF A PHILOSOPHICAL OR EMOTIONAL STATE OF MIND.  
 3 SEM/LAR HRS  
 MS. MALLARD  
 1 CREDIT

MUSIC 185 APPLIED MUSIC  
 HRS BY ARRG  
 STAFF  
 1 CREDIT

MUSIC 190 BALLET TECHNIQUE I  
 INDIVIDUAL AND CLASS INSTRUCTION IN INSTRUMENT AND VOICE. INTRODUCTION IN THE FOLLOWING INSTRUMENTS HAS BEEN OFFERED: FLUTE, VIOLIN, PIANO, CLASSICAL GUITAR, CLARINET, OBOE, SAXOPHON. THE PROGRAM IS OPEN TO STUDENTS WHO ARE OFFICIALLY DECLARED AS MUSIC MAJORS AND WHO ARE EITHER ACTIVELY ENGAGED IN FULFILLING MUSIC MAJOR REQUIREMENTS OR HAVE COMPLETED ALL OF THESE. LESSONS ARE GIVEN WEEKLY FOR A TWELVE-WEEK PERIOD. STUDENTS ARE RESPONSIBLE FOR PROVIDING THEIR OWN INSTRUMENTS. THIS COURSE CAN BE REPEATED WITH THE PERMISSION OF THE INSTRUCTOR AND THE APPROVAL OF THE DEPARTMENT CHAIRMAN.  
 HRS BY ARRG  
 STAFF  
 1 CREDIT

MUSIC 191 BALLET TECHNIQUE II  
 HRS BY ARRG  
 STAFF  
 1 CREDIT

MUSIC 202 INTRODUCTION TO MUSICAL RESEARCH I  
 BASIC RESEARCH MATERIALS AND SCHOLARLY PROCEDURES.  
 PREREQUISITE: MUSIC 111-112 OR PERMISSION OF INSTRUCTOR  
 3 LECT HRS  
 MR. TAMA  
 3 CREDITS

MUSIC 221 SECOND YEAR THEORY AND COMPOSITION  
 COUNTERPOINT IN THE 17TH, 18TH AND 20TH CENTURIES.  
 PREREQUISITE: MUSIC 122  
 3 LECT HRS  
 MR. CLEVELAND, MR. PRINS  
 3 CREDITS

MUSIC 222 SECOND YEAR THEORY AND COMPOSITION  
 THE STUDY OF HARMONY AFTER 1850-EMPHASIS ON THE 20TH CENTURY.  
 PREREQUISITE: MUSIC 122  
 3 LECT HRS  
 MR. CLEVELAND, MR. PRINS  
 3 CREDITS

MUSIC 223 EAR TRAINING AND SIGHT SINGING.  
A CONTINUATION OF MUSIC 123-124. MATERIAL CONSISTS OF MELODIES ILLUSTRATING CHROMATICISM, MODULATION, MODES AND FREER TONALITY, MORE COMPLEX RHYTHM, ALTERED CHORDS AND CONTRAPUNTAL MUSIC.  
2 LECT HRS  
MR. PRINS 2 CREDITS

MUSIC 224 EAR TRAINING AND SIGHT SINGING  
A CONTINUATION OF MUSIC 223. MATERIAL CONSISTS OF MELODIES ILLUSTRATING CHROMATICISM, MODULATION, MODES AND FREER TONALITY, MORE COMPLEX RHYTHM, ALTERED CHORDS AND CONTRAPUNTAL MUSIC.  
2 LECT HRS  
MR. PRINS 2 CREDITS

MUSIC 231 ELEMENTS OF MUSIC  
A CONTINUATION OF MUSIC 131-132 WITH SOME EMPHASIS ON CONTEMPORARY MATERIALS.  
PREREQUISITE: MUSIC 131-132 OR PERMISSION OF INSTRUCTOR  
2 LECT HRS  
MS. LEAVENWORTH 2 CREDITS

MUSIC 232 ELEMENTS OF MUSIC  
A CONTINUATION OF MUSIC 231 WITH SOME EMPHASIS ON CONTEMPORARY MATERIALS.  
PREREQUISITE: MUSIC 131-132 OR PERMISSION OF INSTRUCTOR  
2 LECT HRS  
MS. LEAVENWORTH 2 CREDITS

MUSIC 234 DEVELOPMENT OF CHAMBER MUSIC  
SELECTED WORKS FROM HAYDN TO SCHONBERG, CENTERING CHIEFLY ON THE MEDIUM OF STRING QUARTET.  
PREREQUISITE: MUSIC 122 OR EQUIVALENT  
3 LECT HRS  
MR. HERMAN 3 CREDITS

MUSIC 235 ITALIAN OPERA  
DEVELOPMENT OF OPERA AFTER THE BAROQUE. EMPHASIS ON MOZART, VERDI, THE VERISSIMO, AND STRAVINSKY'S THE RAKES PROGRESS.  
PREREQUISITE: MUSIC 122  
3 LECT HRS  
MR. CLEVELAND 3 CREDITS

MUSIC 241 19TH CENTURY AMERICAN MUSIC  
THE GROWTH AND DEVELOPMENT OF AMERICAN MUSIC TO THE YEAR 1900.  
CHARLES IVES, IN BOTH ITS RURAL-FOLK AND URBAN ASPECTS.  
3 LECT HRS  
MR. TAWA 3 CREDITS

MUSIC 243 THE TRADITIONAL FOLK MUSIC OF EUROPE AND AMERICA  
THE INVESTIGATION OF THE FUNCTIONS, VALUES, AND MUSICAL STYLES OF RURAL AND URBAN TRADITIONAL MUSIC IN EUROPE AND AMERICA.  
3 LECT HRS  
MR. TAWA 3 CREDITS

MUSIC 242 20TH CENTURY AMERICAN MUSIC  
THE PRESENT-DAY FERMENT IN AMERICAN MUSIC AND THE GRADUAL EMERGENCE OF AMERICAN COMPOSERS OF INTERNATIONAL STATURE.  
3 LECT HRS  
MR. TAWA 3 CREDITS

MUSIC 251 HISTORY AND DEVELOPMENT OF JAZZ IN AMERICA  
THE DEVELOPMENT OF JAZZ FROM ITS ORIGIN TO THE PRESENT.  
PREREQUISITE: MUSIC 122 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. HUGGLER 3 CREDITS

MUSIC 252 THE HISTORY OF NON-JAZZ BLACK MUSIC  
THE VARIETIES OF BLACK MUSIC FOUND IN POPULAR, RELIGIOUS, MINSTREL SHOW AND FORMAL MUSIC.  
3 LECT HRS  
MR. CLEVELAND 3 CREDITS

MUSIC 261 19TH CENTURY MUSIC  
THE DEVELOPMENT OF SYMPHONIC MUSIC FROM SCHUBERT TO MAHLER.  
PREREQUISITE: MUSIC 122 OR EQUIVALENT

MUSIC 262 MUSIC IN THE 20TH CENTURY  
THE VARIOUS DIRECTIONS TAKEN BY MUSIC SINCE 1900.  
PREREQUISITE: MUSIC 122  
3 LECT HRS  
MR. HUGGLER 3 CREDITS

MUSIC 271 MUSIC OF THE CLASSICAL PERIOD  
MUSIC OF THE CLASSICAL PERIOD WITH EMPHASIS ON HAYDN AND MOZART.  
PREREQUISITE: MUSIC 122 OR EQUIVALENT  
3 LECT HRS  
MR. TAWA 3 CREDITS

MUSIC 272 THE MUSICAL WORKS OF BEETHOVEN  
BEETHOVEN'S MUSICAL WORKS-MIS SYMPHONIES, QUARTETS AND PIANO SONATAS.  
PREREQUISITE: MUSIC 122 OR EQUIVALENT  
3 LECT HRS  
MR. TAWA 3 CREDITS

MUSIC 281 COUNTERPOINT  
A SURVEY OF CONTRAPUNTAL TECHNIQUES, CULMINATING IN THE 18TH CENTURY. DAILY PRACTICAL APPLICATION IN EXERCISES GIVEN CANTUS FIRMI, FROM THREE VOICE MOTET TO 6 VOICE MASS.  
PREREQUISITE: MUSIC 221-222  
3 LECT HRS  
MR. PATTERSON 3 CREDITS

MUSIC 282 FORM AND ANALYSIS  
A STUDY OF THE FORMAL ASPECTS OF COMPOSITIONS FROM THE SONG, ABA, THROUGH THE ORCHESTRAL TONE POEM, EACH COMPOSITION WILL BE EXAMINED FOR HARMONIC APPLICATION AS WELL AS ITS OVERALL FORMAL ASPECTS.  
PREREQUISITE: MUSIC 221-222  
3 LECT HRS  
MR. PATTERSON 3 CREDITS

MUSIC 291 ORCHESTRATION I  
THE RANGES OF INSTRUMENTS, PRACTICAL WAYS OF COMBINING THEM AND DISCUSSION OF MASS, TEXTURE AND SOUND.  
PREREQUISITE: MUSIC 294  
3 LECT HRS  
STAFF 3 CREDITS

MUSIC 293 INTRODUCTORY COMPOSITION  
INVESTIGATIONS AND EXERCISES IN RHYTHMIC STUDIES AND THE RELATIONSHIP OF MELODY TO HARMONY AND ORGANIC GROWTH.  
PREREQUISITE: THEORY 121  
2 LECT HRS  
MR. HUGGLER 3 CREDITS

MUSIC 294 INTERMEDIATE COMPOSITION  
THE BEGINNING OF COMPOSITION IN LARGER FORMS, PHASE STRUCTURE, EMPHASIS ON UNIFYING PRINCIPLES IN BOTH LANGUAGE AND FORM.  
PREREQUISITE: MUSIC 293  
3 LECT HRS  
MR. HUGGLER 3 CREDITS

MUSIC 295 MUSIC OF THE HIGH BAROQUE  
MUSIC FROM THE TIME OF HACH, MANDEL, VIVALDI, AND COUPERIN.  
PREREQUISITE: MUSIC 122 OR EQUIVALENT  
3 LECT HRS  
MR. BERMAN 3 CREDITS

MUSIC 296 ORCHESTRATION II  
THE RANGES OF INSTRUMENTS, PRACTICAL WAYS OF COMBINING THEM AND DISCUSSION OF MASS, TEXTURE AND SOUND.  
PREREQUISITE: MUSIC 293  
3 LECT HRS  
MR. PRINS 3 CREDITS

MUSIC 332 MUSIC IN THE RENAISSANCE  
THE SACRED AND SECULAR COMPOSITIONS OF THE 15TH AND 16TH CENTURIES. FROM DUFAY TO GABRIELI.  
PREREQUISITE: MUSIC 293  
1 LECT HRS  
MR. TAWA 3 CREDITS



MUSIC 479 INDEPENDENT STUDY  
 OPEN TO ADVANCED STUDENTS WHO WISH TO DO INTENSIVE WORK ON A PARTICULAR TOPIC. A WRITTEN OUTLINE OF THE PROJECT MUST BE SUBMITTED TO THE PROSPECTIVE INSTRUCTOR WELL IN ADVANCE OF THE BEGINNING OF THE SEMESTER IN WHICH THE PROJECT WOULD BE DONE. AN EXTENDED WRITTEN PAPER WOULD BE THE NORMAL OUTCOME OF SUCH A PROJECT.  
 HRS BY ARRANGEMENT  
 STAFF

MUSIC 480 SEMINAR IN AMERICAN MUSIC  
 ADVANCED STUDIES IN AMERICAN MUSIC, WITH EMPHASIS ON INDIVIDUAL RESEARCH, AND INTENDED FOR THE STUDENT WITH A FOUNDATION IN MUSICAL THEORY.  
 PREREQUISITE: THEORY 222 AND AT LEAST ONE SEMESTER OF A HISTORY AND LITERATURE OF MUSIC COURSE  
 3 LECT HRS  
 MR. TAWA 3 CREDITS

MUSIC 481 SEMINAR IN AMERICAN MUSIC  
 A CONTINUATION OF MUSIC 480. ADVANCED STUDIES IN AMERICAN MUSIC, WITH EMPHASIS ON INDIVIDUAL RESEARCH, & INTENDED FOR THE STUDENT WITH A FOUNDATION IN MUSICAL THEORY.  
 PREREQUISITE: THEORY 222 AND AT LEAST ONE SEMESTER OF A HISTORY AND LITERATURE OF MUSIC COURSE  
 3 LECT HRS  
 MR. TAWA 3 CREDITS

MUSIC 586 METHODS AND PRACTICE TEACHING OF MUSIC IN SECONDARY SCHOOLS  
 INSTRUCTION IN METHODS OF TEACHING MUSIC AND SUPERVISION IN PRACTICE TEACHING.  
 PREREQUISITE: 6 HOURS EDUCATION COURSES AND ADMISSION TO THE TEACHER CERTIFICATION PROGRAM  
 3 LECT HRS, 20 LAB HRS  
 STAFF 9 CREDITS

MUSIC 586 CURRICULUM AND METHODS STUDENT TEACHING-MUSIC  
 PREREQUISITE: 6 HOURS EDUCATION COURSES AND ADMISSION TO THE TEACHER CERTIFICATION PROGRAM  
 3 LECT HRS, 20 LAB HRS (PRACTICE TEACHING)  
 STAFF 9 CREDITS

NANTUCKET

NANTK 501 HISTORY AND CULTURE OF NANTUCKET ISLAND  
 AN INTRODUCTORY, INTERDISCIPLINARY SEMINAR SURVEYING THE SOCIAL, POLITICAL, CULTURAL, AND COMMERCIAL HISTORY OF NANTUCKET ISLAND, FROM ITS EARLIEST SETTLEMENTS TO THE PRESENT DAY.  
 PREREQUISITE: ADMISSION TO THE NANTUCKET PROGRAM  
 6 LECT HRS/WEEK FOR 6 WEEKS  
 MR. PHILLIPS, MR. STACKPOLE 3 CREDITS

NANTK 502 NATURAL ENVIRONMENTS OF NANTUCKET  
 INTRODUCTION TO THE UNIQUE NATURAL HISTORY OF NANTUCKET AND TO GENERAL ECOLOGICAL PRINCIPLES, EMPHASIZING THE RELATIONSHIP OF HUMAN HISTORY TO ISLAND ECOLOGY AND THE VARIETY OF BIODIC HABITATS. FIELD TRIPS REQUIRED.  
 PREREQUISITE: ADMISSION TO THE NANTUCKET PROGRAM  
 3 LECT HRS, 3-4 FIELD HRS/WEEK FOR 6 WEEKS  
 MR. TIFFNEY, MR. ANDREWS 3 CREDITS

NANTK 510 METHODS OF HUMANISTIC RESEARCH ON NANTUCKET  
 INTRODUCTION TO RESEARCH AND METHODS FOR HUMANISTIC INQUIRY ON NANTUCKET. UTILIZING PRIMARY SOURCE MATERIALS AND CULTURAL ARTIFACTS. UMR AND ON-ISLAND SCHOLARS WILL PARTICIPATE IN THE SEMINAR TO DISCUSS THEIR RESEARCH AND THAT OF OTHERS. WEEKLY CONFERENCES WITH PROGRAM DIRECTOR & FIELD TRIPS TO NANTUCKET RESEARCH CENTER REQUIRED. OUTRECTOR AND FIELD TRIPS TO NANTUCKET RESEARCH CENTERS REQUIRED.

PHIL 100 INTRODUCTION TO PHILOSOPHY  
 AN INTRODUCTORY EXAMINATION OF THE PROBLEMS AND SCOPE OF PHILOSOPHY.  
 3 LECT HRS  
 STAFF 4 CREDITS

PHIL 101 PROJECTS ON CONTEMPORARY ISSUES  
 RESEARCH WILL BE CONDUCTED ON RELEVANT CONTEMPORARY ISSUES THAT RELATE TO TRADITIONAL PHILOSOPHICAL PROBLEMS.  
 HRS BY ARRANGEMENT  
 STAFF 1 CREDIT

PHIL 104 REASONING AND ARGUMENT  
 THIS COURSE IS DESIGNED TO INTRODUCE THE STUDENT TO THE BASICS OF REASONING, ARGUMENTATION, AND CRITICAL THINKING. WE WILL DISCUSS CRITERIA OF SOUND REASONING, VALID ARGUMENTATION, COMMON FALLACIES, BASIC INFORMAL LOGIC. COURSE WILL DRAW HEAVILY ON EXAMPLES AND EXERCISES, WHICH WILL BE DRAWN PRIMARILY FROM NON-PHILOSOPHICAL DISCOURSE, E.G. POLITICAL STATEMENTS, ADVERTISEMENTS, NEWS STORIES, COMIC STRIPS.  
 3 LECT HRS  
 MR. EVANS 3 CREDITS

PHIL 105 PUTTING REASONING INTO EFFECTIVE WRITING  
 THIS COURSE IS DESIGNED TO HELP STUDENTS PERFECT THEIR SKILLS IN THE PRESENTATION OF WRITING, OF REASONED ARGUMENT AND DISCOURSE. THE COURSE WILL FOCUS ON METHODS OF ANALYSIS, DEFINITION, AND CONCEPTUAL CLARIFICATION, TYPES OF ARGUMENTATION, AND THE APPLICABILITY OF DIFFERENT TYPES OF ARGUMENTATION IN PRACTICAL AFFAIRS. THROUGHOUT THE THEME WILL BE WAYS OF EFFECTIVELY TRANSLATING THESE INTELLECTUAL SKILLS INTO FORCEFUL PROSE FOR THE PURPOSE OF COMMUNICATION AND RATIONAL DIALOGUE. THIS COURSE SATISFIES ONE SEMESTER OF THE FRESHMAN WRITING REQUIREMENT.  
 2 LAB HRS  
 MR. EVANS 4 CREDITS

PHIL 105 PUTTING REASONING INTO EFFECTIVE WRITING  
 THIS COURSE IS DESIGNED TO HELP STUDENTS PERFECT THEIR SKILLS IN THE PRESENTATION OF WRITING, OF REASONED ARGUMENT AND DISCOURSE. THE COURSE WILL FOCUS ON METHODS OF ANALYSIS, DEFINITION, AND CONCEPTUAL CLARIFICATION, TYPES OF ARGUMENTATION, AND THE APPLICABILITY OF DIFFERENT TYPES OF ARGUMENTATION IN PRACTICAL AFFAIRS. THROUGHOUT THE THEME WILL BE WAYS OF EFFECTIVELY TRANSLATING THESE INTELLECTUAL SKILLS INTO FORCEFUL PROSE FOR THE PURPOSE OF COMMUNICATION AND RATIONAL DIALOGUE. THIS COURSE SATISFIES ONE SEMESTER OF THE FRESHMAN WRITING REQUIREMENT.  
 2 LAB HRS  
 MR. EVANS 4 CREDITS

NANTK 520 INDEPENDENT STUDY AND RESEARCH ON NANTUCKET  
 PREREQUISITE: ADMISSION TO THE NANTUCKET PROGRAM  
 HRS BY ARRANGEMENT  
 STAFF 3 CREDITS

NANTK 521 NANTUCKET RESEARCH PROJECT  
 AN INTENSIVE PROGRAM OF INDEPENDENT STUDY OF AN APPROPRIATE NANTUCKET SUBJECT, UTILIZING ISLAND RESEARCH RESOURCES AND PLANNED WITH A FACULTY ADVISOR WHO WILL PROVIDE NECESSARY COUNSEL AND GUIDANCE. MUST CONFORM TO RELEVANT DEPARTMENTAL GUIDELINES AND STANDARDS. PERIODIC CONFERENCE WITH PROGRAM DIRECTOR AND CONSULTATION WITH FACULTY ADVISOR REQUIRED.  
 PREREQUISITE: ADMISSION TO THE NANTUCKET PROGRAM  
 HRS BY ARRANGEMENT  
 STAFF 3 CREDITS

PHILOSOPHY

Graduation Requirements

Standard Philosophy majors are required to take both PH 100 (Introduction to Philosophy) and PH 120 (Introduction to Logic). Intermediate courses are historical surveys or introductions to special areas of philosophical inquiry which are intended to provide basic knowledge of the field. Advanced courses are given in the more specific areas of Philosophy.

Summary of requirements for the standard major: PH 100, PH 120, PH 211, PH 212, and five additional courses including at least two from the advanced level.

Summary of the requirements for the special major in Ethics, Social and Political Philosophy: PH 100 and eight additional courses including at least five from the following fields with at least one course in each field: History of Ethics, Social and Political Philosophy; Methodology of Ethics.

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |     |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|
| PHIL 10R | MORAL AND SOCIAL PROBLEMS<br>IMPORTANT MORAL AND SOCIAL ISSUES OF CURRENT CONCERN WILL BE EXAMINED AND DEBATED. THE COURSE COVERS THREE PROBLEMS EACH SEMESTER FROM A LIST INCLUDING: CRIMINAL PUNISHMENT, WAR, ABORTION, RACISM, VIOLENCE, THE DEATH PENALTY, PRIVATE PROPERTY AND SEXISM. STUDENTS MAY SIGN UP FOR ANY OR ALL PARTS OF THIS COURSE AND WILL RECEIVE ONE, TWO OR THREE CREDITS ACCORDINGLY.<br>3 LECT HRS<br>MR. BLUM, MR. COHEN<br>1-3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                               |      |     |
| PHIL 110 | PHILOSOPHY AND LITERATURE FROM THE ENLIGHTENMENT TO THE PRESENT<br>THE AIM OF THIS COURSE IS TO FAMILIARIZE THE STUDENT WITH DOMINANT THEMES IN MODERN THOUGHT AS EMBODIED IN REPRESENTATIVE PHILOSOPHICAL AND LITERARY CLASSICS FROM VOLTAIRE'S CRITIQUE OF THEODOCY IN CANDIDE TO FREUD'S CRITIQUE OF CIVILIZATION IN HIS CIVILIZATION AND ITS DISCONTENTS. THE METAPHYSICS OF ROMANTICISM IS EXAMINED IN GOETHE'S FAUST. DOSTOEVSKY'S NOTES FROM THE UNDERGROUND PROVIDE A SEMINAL INTRODUCTION TO NIHLISM. THOREAU'S WALDEN SCRUTINIZES THE IDEA OF PROGRESS AND MAN'S POSSIBILITIES IN A TECHNOLOGICAL AGE. IN THE DEATH OF IVAN ILYICH TOLSTOY ANTICIPATES HEIDEGGER'S ANALYSIS OF DEATH, AND IN HIS REVOLT OF THE MASSES ORTEGA Y GASSET REVEALS THE TRAGIC CONFLICT OF OUR CENTURY BETWEEN THE INCOMPATIBILITY OF MAN AND HIS HUMANITARIAN IDEALS.<br>3 LECT HRS<br>STAFF<br>3 CREDITS | PHIL | 21R |
| PHIL 120 | INTRODUCTION TO LOGIC<br>THE FORMS OF VALID REASONING - DEDUCTIVE AND INDUCTIVE, AND THEIR ROLE IN REFLECTIVE THINKING. FORMAL LOGIC, TRUTH FUNCTIONS, QUANTIFIERS, PROOFS OF FORMAL ADEQUACY THE CLASSICAL PROBLEM AND NEW RIDDLE OF INDUCTION, REASONING WITH PROBABILITIES AND ELEMENTS OF GAME THEORY.<br>3 LECT HRS<br>MR. DARMSTAETER<br>4 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PHIL | 219 |
| PHIL 130 | PHILOSOPHY OF EDUCATION<br>PHILOSOPHICAL TOPICS AND CONCEPTS RELEVANT TO THE NATURE AND AIMS OF EDUCATION.<br>3 LECT HRS<br>MS. MARTIN<br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PHIL | 220 |
| PHIL 211 | ANCIENT PHILOSOPHY<br>THEORIES ABOUT BEING AND NOT BEING, TRUTH AND FALSHOOD, MEANING AND REFERENCE, KNOWLEDGE AND BELIEF, PERCEPTION AND REASON, GOOD AND EVIL, FROM THE PRE-SOCRATICS TO THE STOICS, EPICUREANS, SKEPTICS, AND NEO-PLATONISTS. WITH EMPHASIS ON PLATO AND ARISTOTLE<br>PREREQUISITE: PHILOSOPHY 100 OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>MR. ANOTIC<br>4 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PHIL | 224 |
| PHIL 212 | MODERN PHILOSOPHY<br>THE VIEWS OF THE CONTINENTAL RATIONALISTS - DESCARTES, SPINOZA, LEIBNIZ - AND THE BRITISH EMPIRICISTS - LOCKE, HUME - IN RELATION TO THE GENERAL INTELLECTUAL DEVELOPMENTS FROM THE RENAISSANCE TO THE ENLIGHTENMENT.<br>PREREQUISITE: PHILOSOPHY 100<br>3 LECT HRS<br>MR. ANOTIC, MR. COHEN<br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PHIL | 225 |
| PHIL 214 | CONTEMPORARY PHILOSOPHY<br>SOME MAJOR TRENDS OF ANALYTICAL PHILOSOPHY IN THE 20TH CENTURY. EMPHASIS ON THE ROLE OF LANGUAGE IN THE FORMULATIONS OF PROPOSED SOLUTIONS TO TRADITIONAL PROBLEMS IN EPISTEMOLOGY AND METAPHYSICS IN THE WRITINGS OF SUCH PHILOSOPHERS AS RUSSELL, MOORE, AND WITTGENSTEIN.<br>PREREQUISITE: PHILOSOPHY 100<br>3 LECT HRS<br>STAFF<br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PHIL | 227 |
| PHIL 216 | HISTORY OF ETHICS<br>CRITICAL ISSUES IN MORAL PHILOSOPHY AS EXHIBITED IN THE WRITINGS OF PLATO, ARISTOTLE, AUGUSTINE, HOBBS, KANT, MILL, AND NIETZSCHE.<br>PREREQUISITE: PHILOSOPHY 100<br>3 LECT HRS<br>MR. CLIVE<br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PHIL | 228 |
| PHIL 21R | PHILOSOPHERS OF SOCIETY: MAJOR SOCIAL AND POLITICAL THINKERS<br>THE PRIMARY CONCERN OF THIS COURSE IS HISTORICAL: THE ELUCIDATION OF THE POLITICAL AND SOCIAL THEORIES OF SOME OF THE MAJOR FIGURES OF THE WESTERN TRADITION (E.G. PLATO, MACHIAVELLI, HOBBS, ROUSSEAU, AND MARX). STRESS WILL BE PUT ON THE CONTINUING RELEVANCE OF THESE PHILOSOPHERS BY ALSO USING SOME WORKS OF CONTEMPORARY PHILOSOPHERS AND POLITICAL SCIENTISTS.<br>3 LECT HRS<br>MS. MARTIN, MR. BLUM<br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                     | PHIL | 229 |
| PHIL 219 | MORAL RELATIVITY<br>IN THIS COURSE WE WILL CONSIDER WHETHER THERE ARE RESPECTS IN WHICH MORAL JUDGEMENTS ARE RELATIVE AND WHAT THE CONSEQUENCES OF SUCH RELATIVITY ARE - E.G. DOES IT IMPLY THAT BASIC MORAL DISAGREEMENTS CAN ONLY BE SETTLED BY FORCES - WE WILL ALSO CONSIDER WHETHER THERE ARE ANY ASPECTS OF A PERSON'S RATIONAL, EMOTIONAL, OR SOCIAL NATURE THAT REOUTHE ONE TO HOLD SOME SPECIFIC SET OF MORAL VALUES RATHER THAN ANOTHER.<br>PREREQUISITE: PHILOSOPHY 100 OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>MR. SHOPE<br>3 CREDITS                                                                                                                                                                                                                                                                                                                                        | PHIL | 230 |
| PHIL 220 | ETHICAL THEORY<br>THE MAIN PROBLEMS AND THEORIES CONCERNING THE NATURE, SCOPE AND JUSTIFICATION OF VALUE JUDGEMENTS. A SYSTEMATIC RATHER THAN HISTORICAL APPROACH.<br>PREREQUISITE: PHILOSOPHY 100<br>3 LECT HRS<br>STAFF<br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PHIL | 231 |
| PHIL 224 | PHILOSOPHY OF ART<br>SOME OF THE MAJOR TRADITIONAL PROBLEMS IN AESTHETICS, SUCH AS, THE RELATIONSHIP BETWEEN ART AND MORALITY, THE ROLE OF AESTHETIC EXPERIENCE AND THE NATURE OF THE IMAGINATION AND TRADITION, THESE AND RELATED ISSUES WILL BE CONSIDERED IN CLASSIC TEXTS SUPPLEMENTED BY A CONTEMPORARY SURVEY OF CRITICAL QUESTIONS.<br>PREREQUISITE: PHILOSOPHY 100 OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>MR. ANOTIC<br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                               | PHIL | 232 |
| PHIL 225 | PHILOSOPHY OF RELIGION<br>TRADITIONAL ISSUES IN THE PHILOSOPHY OF RELIGION SUCH AS ARGUMENTS FOR THE EXISTENCE OF GOD, THE PROBLEM OF EVIL AND THE PROBLEM OF CREATION AND TIME. READINGS SUPPLEMENTED BY CONTEMPORARY APPROACHES.<br>PREREQUISITE: PHILOSOPHY 100 OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>STAFF<br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PHIL | 233 |
| PHIL 227 | EXISTENTIALISM<br>MAJOR FORCES AND CONCEPTS IN THE DEVELOPMENT OF EXISTENTIALISM.<br>PREREQUISITE: PHILOSOPHY 100<br>3 LECT HRS<br>STAFF<br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PHIL | 234 |
| PHIL 228 | PHILOSOPHY OF THE MIND<br>THE NATURE OF MIND AND ITS RELATION TO BODY AND MATTER, WITH EMPHASIS ON RECENT ADVANCES IN PHILOSOPHY AND PSYCHOLOGY.<br>PREREQUISITE: PHILOSOPHY 100 OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>STAFF<br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | PHIL | 235 |
| PHIL 232 | 19TH CENTURY RUSSIAN THOUGHT<br>AN HISTORICAL AND PHILOSOPHICAL EXAMINATION OF THE MAJOR IDEOLOGIES IN 19TH CENTURY RUSSIAN THOUGHT SUCH AS PAN-SLAVISM, NIHLISM, MARXISM AND THE DIVERSE LEGACY OF GERMAN IDEALISM. THE RISE OF THE RUSSIAN INTELLIGENTSIA AND THE REVIVAL OF RELIGIOUS THOUGHT AT THE TURN OF THE CENTURY IN RELATION TO THE GREAT TRADITION OF CLASSICAL RUSSIAN PROSE FICTION.<br>PREREQUISITE: PHILOSOPHY 100 OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>MR. CLIVE<br>3 CREDITS                                                                                                                                                                                                                                                                                                                                                                                        | PHIL | 236 |



|      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |
|------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| PHIL | 247 | PROBLEMS OF METAPHYSICS<br>IDEAS SUCH AS SUBSTANCE, CAUSALITY, MIND AND BODY, AND FREE WILL AS THEY APPEAR IN SEVERAL MAJOR METAPHYSICAL SYSTEMS.<br>PREREQUISITE: ANY INTERMEDIATE COURSE.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3 CREDITS | PHIL | 249 | MARXIST PHILOSOPHY<br>PREREQUISITE: PHILOSOPHY 100 OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3 CREDITS |
| PHIL | 250 | MATERIALIST THEORIES OF MIND<br>IN THIS COURSE WE WILL DISCUSS WHETHER OR NOT IT IS DEFENSIBLE TO ACCEPT THE VIEW THAT MENTAL PHENOMENA ARE IDENTICAL WITH EITHER PHYSICAL CONDITIONS (E.G. IN THE BRAIN) OR WITH DISPOSITIONS TOWARD PHYSICAL BEHAVIOR. IS SUCH A VIEW REQUIRED FOR A SCIENTIFIC PSYCHOLOGY AND BEHAVIOR FROM CLASSICAL AND CONTEMPORARY SOURCES.<br>PREREQUISITE: PHILOSOPHY 100 OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>MR. SHOPE                                                                                                                                                                                                                                                              | 3 CREDITS | PHIL | 250 | PHILOSOPHY OF LAW<br>THIS COURSE WILL INVESTIGATE THE INTERNAL ASPECTS OF LAW AND LEGAL SYSTEMS, I.E., THE NATURE OF LAW, THE STRUCTURE OF LEGAL SYSTEMS, CRITERIA OF LEGAL VALIDITY, ETC.. ALL CONSIDERING A LEGAL SYSTEM AS AN ISOLATED CLOSED SYSTEM OF CONCEPTS, POSTULATES/RULES OF INFERENCE, DEDUCTIONS, AND CONCLUSIONS. THE COURSE WILL ALSO BE CONCERNED WITH THE EXTERNAL ASPECTS OF THE LAW, I.E. THOSE RELATIONSHIPS WHICH EXIST BETWEEN THE LAW ITSELF, CONCEIVED SIMPLY AS A BODY OF RULES, AND OTHER THINGS EXTERNAL TO ITSELF. WE WILL BE CONCERNED WITH THE FUNCTIONS OF THE LAW, THE LIMITS OF LAWMAKING AS AN ENTERPRISE, AND MOST ESPECIALLY THE RELATIONSHIP BETWEEN THE LAW AND MORALITY.<br>PREREQUISITE: PHILOSOPHY 100 OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>MR. EVANS | 3 CREDITS |
| PHIL | 251 | TOPICS IN EDUCATIONAL THEORY AND PHILOSOPHY<br>DESIGNED FOR STUDENTS WITH SOME BACKGROUND IN PHILOSOPHY. THIS COURSE WOULD FOCUS ON ONE OR MORE PROBLEMS IN PHILOSOPHY OF EDUCATION. EXAMPLES OF WHICH ARE - THE NATURE OF TEACHING AND LEARNING. THE JUSTIFICATION OF EDUCATIONAL DECISIONS. THE AIMS AND CONTENT OF POLITICAL, MORAL AND RELIGIOUS EDUCATION, THE RELATIONSHIP BETWEEN EDUCATION AND SOCIETY. THE NATURE OF A LIBERAL EDUCATION.<br>PREREQUISITE: INTRODUCTION TO PHILOSOPHY OR PERMISSION OF THE INSTRUCTOR<br>3 LECT HRS<br>MS. MARTIN                                                                                                                                                              | 3 CREDITS | PHIL | 252 | EGOTISM, SELFLESSNESS AND LOVE<br>AN EXAMINATION OF SOME CENTRAL ISSUES IN MORAL PHILOSOPHY-ARE PEOPLE CONCERNED ONLY WITH THEMSELVES, OR IS GENUINE LOVE OR ALTRUISM POSSIBLE AND IS IT GOOD TO BE SELFLESS, OR IS IT ONLY RATIONAL TO PURSUE ONE'S OWN INTERESTS. DOES ALTRUISM INVOLVE SELF-DENIAL AND GROUNDING.<br>SOCIAL THEORY. READING FROM PHILOSOPHERS SUCH AS HOBBS, KANT, SCHOPENHAUER, SCHLEGEL, PSYCHOLOGISTS SUCH AS S. FREUD, MORLEY, ANNA FREUD, AND CONTEMPORARY EXPERIMENTAL WORK ON ALTRUISM - REFERENCE TO SELFISHNESS AND SELFLESSNESS IN WOMEN. E.G. DE BEHAVIOR - THE SOCIAL CONTEXT OF EGOTISM AND ALTRUISM. E.G. R.W. TITMUS, THE GIFT RELATIONSHIP<br>3 LECT HRS<br>MR. BLUM                                                                                                  | 3 CREDITS |
| PHIL | 253 | SOCIAL AND POLITICAL PHILOSOPHY<br>REPRESENTATIVE PROBLEMS AND THEMES OF SOCIAL AND POLITICAL PHILOSOPHY ESPECIALLY THE CONCEPTS OF HUMAN RIGHTS, LIBERTY, JUSTICE, EQUALITY, LAW, SOCIAL OBLIGATION AND THE SOCIAL CONTRACT.<br>PREREQUISITE: PHILOSOPHY 100<br>3 LECT HRS<br>MR. COHEN, MR. BLUM                                                                                                                                                                                                                                                                                                                                                                                                                      | 3 CREDITS | PHIL | 257 | ORIENTAL PHILOSOPHY<br>THE AIM OF THIS COURSE IS TO INTRODUCE TO THE MAJOR TRADITIONS IN INDIAN, CHINESE, AND JAPANESE THOUGHT. THESE TRADITIONS WILL BE APPROACHED FROM THREE DIRECTIONS - 1. PHILOSOPHICAL THEORY 2. EXPERIMENTAL RELIGIOUS PRACTICE. 3. LIFE-STYLE EXPERIMENTATION AND ETHICAL -SOCIAL THEORY. READINGS WILL INCLUDE SELECTIONS FROM THE BHAGAVAD GITA, HUNDTUTS, THE I CHING AND ORIGINAL TAOIST WORKS. CLASS MEETINGS WILL BE DEVOTED TO LECTURES ON THE TRADITIONS AS WELL AS TO DEMONSTRATIONS OF VARIOUS ACTUAL PRACTICES OF YOGA AND MEDITATIONAL TECHNIQUES, IN ADDITION SMALL GROUP MEETINGS WILL BE PROVIDED TO ALLOW FOR DISCUSSION.<br>3 LECT HRS, 1 DISC HR<br>STAFF                                                                                                      | 3 CREDITS |
| PHIL | 258 | DETERMINISM, FREEDOM AND SOCIAL THEORY<br>A STUDY OF THE IMPLICATIONS OF A FREE-WILL-DETERMINISM CONTROVERSY FOR CERTAIN PROBLEMS IN SOCIAL THEORY. HARD DETERMINISM, LIBERTARIANISM AND RECONCILIATIONISM WILL BE EXAMINED FOR THEIR RESPECTIVE CONCEPTIONS OF HUMAN ACTION. THESE VIEWS WILL BE APPLIED TO SUCH QUESTIONS AS: CAN WE HOLD INDIVIDUAL MEMBERS OF SOCIETY RESPONSIBLE FOR THEIR ACTIONS OR FOR THE CONDITIONS UNDER WHICH THEY LIVE AND HOW ARE THE VARIOUS RATIONALES FOR PUNISHING LAWBREAKERS DEPENDENT ON OUR CONCEPTIONS OF FREEDOM AND WHAT IS A FREE SOCIETY AND IS LIBERTY A REALISTIC POLITICAL IDEAL<br>PREREQUISITE: PHILOSOPHY 100 OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>MR. COHEN  | 3 CREDITS | PHIL | 259 | PHILOSOPHY OF HISTORY<br>SOME SPECIAL PROBLEMS CONCERNING THE CONDITIONS OF HISTORICAL KNOWLEDGE, SUCH AS THE POSSIBILITY OF OBJECTIVITY, THE STANDARDS FOR JUSTIFIED EXPLANATION, THE ROLE OF CAUSAL LAWS, AND THE PLACE OF VALUE JUDGEMENTS.<br>PREREQUISITE: ANY INTERMEDIATE COURSE OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3 CREDITS |
| PHIL | 259 | EQUALITY<br>THE NOTION OF EQUALITY BETWEEN PEOPLE, WITH PARTICULAR REFERENCE TO TWO PROMINENT FORMS OF SOCIAL INEQUALITY -- SEX AND CLASS. CONNECTION OF EQUALITY TO RESPECT, SELF-RESPECT, AND DIGNITY. CONCEPTIONS OF A SOCIETY IN WHICH EVERYONE IS EQUAL. ISSUES OF STATUS, PRESTIGE, AND SOCIAL VALUING AND THEIR RELATION TO A PERSON'S VALUING OF HIMSELF OR HERSELF. READINGS, MILL - THE SUBJECTION OF WOMEN, SENNETT AND COBB - THE HIDDEN INJURIES OF CLASS, DE TOCQUEVILLE - DEMOCRACY IN AMERICA, CONTEMPORARY PHILOSOPHERS SUCH AS JOHN RAWLS, B.A.O. WILLIAMS, DESCRIPTIONS OF EGALITARIAN SOCIETIES - ISRAELI KIRSHUTZ, CHINA, WRITINGS FROM THE WOMEN'S LIBERATION MOVEMENT.<br>3 LECT HRS<br>MR. BLUM | 3 CREDITS | PHIL | 260 | CRITICAL EXAMINATION OF FUNDAMENTAL TOPICS IN PHILOSOPHY OF ACTION. THE DISTINCTION BETWEEN ACTION AND BEHAVIOR, BASIC ACTIONS, THE INDIVIDUATION OF ACTIONS, ABILITY AND ACTION, RESPONSIBILITY AND ACTION, KNOWLEDGE OF ONE'S OWN ACTIONS, AND THE EXPLANATION OF ACTION. DISCUSSION OF THE WORKS OF SUCH PHILOSOPHERS AS AUSTIN, MELDEN, DAVIDSON, CHISHOLM, VON WRIGHT AND GOLDMAN.<br>PREREQUISITE: PHILOSOPHY 100 AND ONE INTERMEDIATE COURSE.<br>3 LECT HRS<br>MS. MARTIN                                                                                                                                                                                                                                                                                                                         | 3 CREDITS |
| PHIL | 261 | CAPITALISM AND SOCIALISM<br>PREREQUISITE: PHILOSOPHY 100 OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3 CREDITS | PHIL | 320 | EMPIRICISM<br>A STUDY OF THE MAJOR EPISTEMOLOGICAL AND METAPHYSICAL WORKS OF JOHN LOCKE, GEORGE HERBERT SPENCER, AND DAVID HUME.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |



|      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |           |      |     |                                                                                                                                                                                                               |           |
|------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| PHIL | 480 | GROUP INDEPENDENT STUDY<br>GROUP INDEPENDENT STUDY<br>ON APPROVED TOPICS IN PHILOSOPHY.<br>PREREQUISITE: APPROVAL OF PHILOSOPHY DEPARTMENT<br>STAFF<br>3 LECT HRS                                                                                                                                                                                                                                                                                                                                                                | 3 CREDITS | PHIL | 480 | GROUP INDEPENDENT STUDY<br>GROUP INDEPENDENT STUDY<br>ON APPROVED TOPICS IN PHILOSOPHY.<br>PREREQUISITE: APPROVAL OF PHILOSOPHY DEPARTMENT<br>STAFF<br>3 LECT HRS                                             | 3 CREDITS |
| PHIL | 332 | MAJORS CURRENTS OF 19TH CENTURY THOUGHT<br>GERMAN IDEALISM, DIALECTICAL MATERIALISM, UTILITARIANISM, EXISTENTIALISM, PRAGMATISM AND VITALISM.<br>PREREQUISITE: ANY INTERMEDIATE COURSE.<br>STAFF<br>3 LECT HRS                                                                                                                                                                                                                                                                                                                   | 3 CREDITS | PHIL | 441 | SELECTED SPECIAL TOPICS IN PHILOSOPHY<br>SELECTED SPECIAL TOPICS IN PHILOSOPHY.<br>PREREQUISITE: PHILOSOPHY 100 OR 108 -3CREDIT-<br>STAFF<br>3 LECT HRS                                                       | 3 CREDITS |
| PHIL | 345 | THEORY OF KNOWLEDGE<br>KNOWLEDGE - ITS NATURE, FORMS, METHODS, SCOPE, AND VALIDATION.<br>PREREQUISITE: ANY INTERMEDIATE PHILOSOPHY COURSE<br>MR. SWARTZ<br>3 LECT HRS                                                                                                                                                                                                                                                                                                                                                            | 3 CREDITS | PHIL | 501 | INTERNSHIP IN PHILOSOPHY<br>STUDENT WILL ASSIST IN DIRECTION OF RESEARCH ON CONTEMPORARY ISSUES<br>CARRIED ON IN PHILOSOPHY 101.<br>PREREQUISITE: PERMISSION OF PHILOSOPHY DEPARTMENT.<br>STAFF<br>3 LECT HRS | 1 CREDIT  |
| PHIL | 346 | PHILOSOPHY OF SCIENCE<br>THE NATURE OF SCIENTIFIC EXPLANATION, WITH ATTENTION TO THE SOCIAL AND PHILOSOPHICAL ASPECTS OF SCIENTIFIC METHODOLOGY.<br>PREREQUISITE: ANY INTERMEDIATE COURSE OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>MR. SHOPE                                                                                                                                                                                                                                                                                | 3 CREDITS |      |     |                                                                                                                                                                                                               |           |
| PHIL | 350 | PHILOSOPHY OF ANTHROPOLOGY<br>THEORIES OF MEANING, TRUTH, REALITY, AND KNOWLEDGE IN THE STUDY OF ALIENS, ESPECIALLY PRE-LITERATE, SOCIETIES AND CONCEPTUAL SYSTEMS. READINGS FROM HUME, AYE, PIERCE, POPPER, WITTGENSTEIN, WINCH, RHEES, MAC INTYRE, GELLNER, EVANS-Pritchard, HODGSON, JARVIE, DOUGLAS AND LEVI-STRAUSS.<br>PREREQUISITE: PHILOSOPHY 100 OR ONE INTERMEDIATE COURSE OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MR. ANDIC                                                                                      | 3 CREDITS |      |     |                                                                                                                                                                                                               |           |
| PHIL | 351 | PLATO<br>PLATO'S ETHICS, METAPHYSICS, AND THEORY OF KNOWLEDGE IN THE PHAEDRUS, REPUBLIC, THEAETETUS, CRATYLUS, PARMENIDES, SOPHISTS, STATESMAN AND PHILIBUS, AS A SOLUTION TO PROBLEMS POSED BY HIS PREDECESSORS. NOTABLY THE PYTHAGOREANS, HERACLITUS, PARMENIDES AND THE SOPHISTS.<br>PREREQUISITE: PHILOSOPHY 211 OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>MR. ANDIC                                                                                                                                                     | 3 CREDITS |      |     |                                                                                                                                                                                                               |           |
| PHIL | 352 | ARISTOTLE<br>ARISTOTLE'S PHILOSOPHY AS A RESPONSE TO PLATO'S VIEWS ABOUT MEANING, BEING, KNOWLEDGE, IDEAS, NUMBERS, AND THE GOOD.<br>PREREQUISITE: PHILOSOPHY 211 OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>MR. ANDIC                                                                                                                                                                                                                                                                                                        | 3 CREDITS |      |     |                                                                                                                                                                                                               |           |
| PHIL | 362 | THE CRITICAL PHILOSOPHY OF IMMANUEL KANT<br>THE CRITIQUE OF PURE REASON, WITH SPECIAL ATTENTION TO KANT'S EPISTEMOLOGY AND CRITIQUE OF METAPHYSICS.<br>PREREQUISITE: PHILOSOPHY 212 OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                          | 3 CREDITS |      |     |                                                                                                                                                                                                               |           |
| PHIL | 375 | PHILOSOPHY AND PSYCHOANALYTIC PSYCHOLOGY<br>PHILOSOPHICAL CLARIFICATION OF PSYCHOANALYTIC CONCEPTS (E.G., UNCONSCIOUSNESS, WISH-FULFILLMENT, PSYCHIC ENERGY, THE MEANING OF MENTAL PHENOMENA) AND ASSESSMENT OF THE JUSTIFICATION FOR THEORETICAL AND CLINICAL CLAIMS IN PSYCHOANALYSIS. STUDENTS ARE URGED TO READ FREUD'S GENERAL INTRODUCTION TO PSYCHOANALYSIS AND SOME OF THE INTERPRETATION OF DREAMS BEFORE THE COURSE.<br>PREREQUISITE: PSYCHOLOGY 101, 215, 220 OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>MR. SHOPE | 3 CREDITS |      |     |                                                                                                                                                                                                               |           |
| PHIL | 478 | INDEPENDENT STUDY J II                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |      |     |                                                                                                                                                                                                               |           |
| PHIL | 479 | INDEPENDENT STUDY ON APPROVED TOPICS IN PHILOSOPHY.<br>PREREQUISITE: APPROVAL OF PHILOSOPHY DEPARTMENT<br>STAFF<br>3 LECT HRS                                                                                                                                                                                                                                                                                                                                                                                                    | 3 CREDITS |      |     |                                                                                                                                                                                                               |           |

## PHYSICS

### Graduation Requirements

Majors must earn a minimum of 32 credits in Physics courses, including Physics 211, 312, 321, and 4 credits of laboratory courses at the level of 281 or higher, and must complete Mathematics 255. Physics courses intended primarily for non-science students (courses numbered between 121 and 150) are open to majors but do not normally count toward the minimum requirements for majors. With the prior approval of the department, a physics major may complete up to 9 credits of course work in other natural sciences, mathematics, and the Physics 121-150 series in lieu of advanced Physics electives.

Most Physics majors (especially those planning graduate work and/or professional careers in physical science) will want to take more Physics and Mathematics than the minimum required for graduation. Additional courses recommended for students planning to pursue graduate studies are Physics 322, 350, 421, and 422 and two more semesters of mathematics, such as Mathematics 270 and 271. Some graduate schools require a reading knowledge of Russian, German, or French. All majors are encouraged to gain facility in computer programming.

Whenever possible, Physics majors should begin their work in both Physics and Mathematics in the freshman year by enrolling in Physics 113-114, 181-182, and Calculus. Students who are interested in Physical Science or Engineering, but who are not ready to move into Physics 113-114, should consider enrolling first in Physics 105-106.

### Courses for Non-science Majors

Courses numbered between 121 and 150 are intended primarily for non-science students. They all emphasize general ideas rather than technical details and are taught with minimal reliance on mathematics. The first semester of these courses has no prerequisites and is open to all students. They satisfy the natural science requirements and carry 4 credits. The interdisciplinary course Science for Survival (Intr-d 125-126) is taught principally by Physics faculty members and can be considered as part of the 121-150 series.

### Introductory Physics Courses

Physics 105-106 is a laboratory-centered course intended for students who are not necessarily well prepared in science or mathematics but who have a scientific or technical inclination. It may also appeal to non-science students who prefer a practical, rather than theoretical, introductory course. Physics 107-108 is a course intended primarily for majoring in biological or behavioral sciences. Familiarity with college level mathematics (algebra or trigonometry) is desirable. Physics 113-114 is a calculus level introductory course intended for students in the physical sciences, pre-engineering and mathematics. Physics 211 completes the introductory sequence of calculus level courses.

- PHYSIC 105 EXPLORING THE PHYSICAL WORLD I II  
106 A LABORATORY-CENTERED COURSE THAT USES OBSERVATION AND MEASURE-  
MENT TO APPROACH THE PRINCIPLES UNDERLYING EVERYDAY DEVICES  
AND PHENOMENA. THE COURSE IS INTENDED ESPECIALLY FOR STUDENTS WITH A  
TECHNICAL OR SCIENTIFIC INCLINATION WHO ARE NOT WELL PREPARED IN  
SCIENCE AND MATHEMATICS AND THEREFORE NEED AN INTRODUCTORY FOUNDATION  
COURSE. ALSO OPEN TO NON-SCIENCE STUDENTS WHO ENJOY LABORATORY WORK  
AND PREFER THE PRACTICAL TO THE THEORETICAL.  
2 LECT HRS, 3 LAB HRS  
STAFF  
4 CREDITS
- PHYSIC 107 COLLEGE PHYSICS I II  
108 NON-CALCULUS INTRODUCTORY PHYSICS FOR THE STUDENT WITH A STRONG  
INTEREST OR BACKGROUND IN SCIENCE. TOPICS IN MECHANICS, WAVE MOTIONS,  
HEAT, KINETIC THEORY OF GASES, ELECTRICITY, OPTICS, ATOMIC AND NUCLEAR  
PHYSICS, BIOLOGY MAJORS, PREMEDICAL STUDENTS, AND OTHERS WHO NEED  
OR WANT LABORATORY WORK IN PHYSICS SHOULD ENROLL CONCURRENTLY IN  
PHYSICS 171-172. (PHYSICS 141-142 IS ALSO AVAILABLE).  
PREREQUISITE: MATHEMATICS 130 OR PERMISSION OF INSTRUCTOR.  
3 LECT HRS, 1 DISC HR  
STAFF  
4 CREDITS
- PHYSIC 113 FUNDAMENTALS OF PHYSICS I  
114 TOPICS IN CLASSICAL PHYSICS, INCLUDING MECHANICS, THERMODYNAMICS, AND  
KINETIC THEORY. BASIC CONCEPTS OF CALCULUS ARE INTRODUCED WITHIN THE  
CONTEXT OF PHYSICAL PHENOMENA. STUDENTS WHO NEED OR WANT LABORATORY  
WORK IN PHYSICS SHOULD ENROLL CONCURRENTLY IN PHYSICS 141. (PHYSICS  
171 IS ALSO AVAILABLE).  
COREQUISITE: MATHEMATICS 140  
3 LECT HRS, 2 DISC HRS  
STAFF  
4 CREDITS
- PHYSIC 116 FUNDAMENTALS OF PHYSICS II  
117 ELECTRICITY, MAGNETISM, WAVES AND LIGHT. FURTHER DEVELOPMENT OF  
MATHEMATICAL TOOLS OF PHYSICS. STUDENTS WHO NEED OR WANT LABORATORY  
WORK IN PHYSICS SHOULD ENROLL CONCURRENTLY IN PHYSICS 142. PHYSICS  
172 IS ALSO AVAILABLE. NOTE: PHYS 114 MAY BE SUBSTITUTED  
FOR MATH 140 AS A PREREQUISITE FOR MATH 240.  
COREQUISITE: MATHEMATICS 141  
3 LECT HRS, 2 DISC HRS  
STAFF  
4 CREDITS
- PHYSIC 121 INTRODUCTION TO ASTRONOMY I II  
122 DESCRIPTIVE INTRODUCTION TO ASTRONOMY AND ASTROPHYSICS. INCLUDES  
STUDY OF THE PLANETS, STARS, GALAXIES, PHYSICS OF SPACE EXPLORATION  
AND LIFE ON OTHER WORLDS.  
3 LECT HRS  
STAFF  
4 CREDITS
- PHYSIC 123 CONCEPTS OF MODERN PHYSICS I II  
124 A VIEW OF THE NATURAL WORLD AS REVEALED BY PHYSICS. EMPHASIZING BASIC  
CONCEPTS AND UNIFYING PRINCIPLES. THE COURSE IS PRESENTED AT A LEVEL  
ACCESSIBLE TO NON-SCIENCE STUDENTS. THE MATERIAL IS DEVELOPED IN  
HISTORICAL CONTEXT AND INCLUDES TOPICS OF CONTEMPORARY INTEREST.  
3 LECT HRS  
STAFF  
4 CREDITS
- PHYSIC 131 SPECIAL TOPICS  
ONE OR MORE TOPICS IN PHYSICS, CHOSEN FOR THEIR CURRENT SCIENTIFIC  
SIGNIFICANCE AND - OR IMPORTANCE TO SOCIETY, WILL BE COVERED.  
SCIENTIFIC, TECHNICAL AND APPROPRIATE SOCIAL ASPECTS WILL BE  
DISCUSSED. SPECIFIC TOPICS AND NUMBER OF CREDITS TO BE ANNOUNCED IN  
PREREQUISITE: WILL BE STATED WHEN SPECIFIC TOPICS ARE ANNOUNCED.  
STAFF  
1-4 CREDITS
- PHYSIC 132 ENERGY  
THE PROBLEMS OF ENERGY - WHAT IT IS, HOW IT IS OBTAINED AND USED,  
LIMITATIONS ON ITS GENERATION FROM VARIOUS SOURCES AND ON ITS  
UTILIZATION - ARE CONSIDERED FROM ALL ASPECTS - SCIENTIFIC, TECHNICAL  
ENVIRONMENTAL, ECONOMIC, ETC. TOPICS INCLUDE - THEORY OF ENERGY,  
GENERATION OF ENERGY FROM FOSSIL, NUCLEAR, SOLAR, GEOTHERMAL,  
ATMOSPHERIC, AND OTHER SOURCES, GENERAL PROBLEMS RELATED TO THE  
PRODUCTION AND CONSUMPTION OF ENERGY, AND PROBLEMS SPECIFIC TO  
PARTICULAR SOURCES.  
3 LECT HRS  
STAFF  
4 CREDITS
- PHYSIC 133 INTRODUCTION TO EARTH SCIENCE I II  
134 A DESCRIPTIVE INTRODUCTION TO GEOSCIENCE, INTEGRATING SUCH FIELDS AS  
GEOLOGY, METEOROLOGY, OCEANOGRAPHY, AND ECOLOGY. EMPHASIS IS PLACED  
ON UNDERSTANDING GEOPHYSICAL PROCESSES OF IMPORTANCE TO HUMAN BEINGS  
AND THEIR ENVIRONMENT. TOPICS INCLUDED ARE - THE ORIGIN OF THE EARTH,  
ITS ENERGY AND MATERIAL RESOURCES, EARTHQUAKES, VOLCANISM, TIDES,  
THE WEATHER, AND OTHER GEOPHENOMENA, THE EVOLUTION OF LIFE AND THE  
ENVIRONMENTAL IMPACT OF HUMAN TECHNOLOGY. STUDENTS DESIRING  
FIRST-HAND EXPERIENCE SHOULD ENROLL CONCURRENTLY IN  
PHYSICS 135-136  
3 LECT HRS  
STAFF  
4 CREDITS
- PHYSIC 135 EARTH SCIENCE LABORATORY I II  
136 A TWO-SEMESTER LABORATORY COURSE DESIGNED TO ACCOMPANY AN  
INTRODUCTORY COURSE IN EARTH SCIENCE (F.G. PHYSICS 133-134). BASIC  
EXPERIMENTS INCLUDE: EXAMINATION OF MINERALS, ROCKS, AND FLUID  
EARTH MATERIALS; ANALYSIS OF SEDIMENTARY PROCESSES AND WEATHERING;  
STUDY OF DIVERSE GEOLOGICAL PROCESSES USING TOPOGRAPHIC AND GEOLOGIC  
MAPS, AERIAL PHOTOGRAPHS, AND FIELD TRIPS.  
COREQUISITE: PHYSICS 133 OR 134  
2-5 LAB HRS IN ALTERNATE WEEKS  
STAFF  
1 CREDIT
- PHYSIC 171 INTRODUCTORY PHYSICS LABORATORY I II  
172 A TWO-SEMESTER COURSE DESIGNED PRIMARILY FOR BIOLOGY MAJORS  
AND PREMEDICAL STUDENTS. EXPERIMENTS IN BASIC PHYSICS ON  
MECHANICS, ELECTRICITY AND MAGNETISM, AND OPTICS WITH  
APPLICATIONS ON THE USE OF PHYSICAL INSTRUMENTS AND TECH-  
NIQUES IN BIOLOGY AND MEDICINE, SUCH AS THEORY AND USE OF  
THE MICROSCOPE, THE CENTRIFUGE, AND ELECTROPHORESIS.  
TECHNIQUES  
COREQUISITE: PHYSICS 107-108 OR 113-114  
2-5 LAB HRS IN ALTERNATE WKS  
STAFF  
1 CREDIT
- PHYSIC 181 PHYSICS LABORATORY I II  
182 TWO SEMESTERS OF LABORATORY WORK IN MECHANICS, THERMO-  
DYNAMICS, ELECTRICITY AND MAGNETISM, AND OPTICS. STUDENTS  
ARE OFFERED THE OPPORTUNITY TO DEVELOP EXTENDED PROJECTS  
WITH THE GUIDANCE OF THE INSTRUCTOR. THE COURSE IS DESIGNED  
FOR SCIENCE MAJORS OR OTHERS HAVING INTEREST IN EXPLORING  
AND EXPLAINING PHYSICAL PHENOMENA THROUGH LABORATORY WORK.  
COREQUISITE: PHYSICS 107-108 OR 113-114  
2-5 LAB HRS IN ALTERNATE WKS  
STAFF  
1 CREDIT
- PHYSIC 211 INTRODUCTION TO CONTEMPORARY PHYSICS  
SPECIAL RELATIVITY, ATOMIC PHYSICS AND ELEMENTS OF QUANTUM MECHANICS,  
INTRODUCTION TO ELEMENTARY PARTICLE PHYSICS, NUCLEAR PHYSICS AND  
SOLID STATE PHYSICS.  
PREREQUISITE: PHYSICS 114  
COREQUISITE: MATHEMATICS 240 OR PERMISSION OF INSTRUCTOR.  
3 LECT HRS  
STAFF  
3 CREDITS
- PHYSIC 221 ASTROPHYSICS, RELATIVITY, AND COSMOLOGY  
INTRODUCTION TO EINSTEIN'S THEORIES OF SPECIAL AND GENERAL RELATIVITY  
AND THE IDEA OF CURVED SPACE-TIME. APPLICATION TO COSMOLOGICAL  
THEORIES OF THE UNIVERSE, INCLUDING THE BIG BANG AND STEADY STATE  
MODELS. ANALYSIS OF OBSERVATION EVIDENCE FOR SUCH THEORIES. SPECIAL

TOPICS IN MODERN ASTROPHYSICS, SUCH AS STELLAR EVOLUTION, UNUSUAL STARS AND GALAXIES, QUASARS AND THE COSMOLOGICAL RED-SHIFT, NO CALCULUS REQUIRED.  
3 LECT HRS  
STAFF  
3 CREDITS

PHYSIC 281 PHYSICAL LABORATORY I, II  
282 BASIC PRINCIPLES OF EXPERIMENTAL PHYSICS AND ERROR ANALYSIS. EXPERIMENTS IN MECHANICS, HEAT, OPTICS, ELECTRICITY, MAGNETISM, ATOMIC AND NUCLEAR PHYSICS.  
4 LAB HRS  
STAFF  
2 CREDITS

PHYSIC 312 MECHANICS  
PRINCIPLES OF NEWTONIAN MECHANICS. CONSERVATION LAWS. GRAVITATIONAL POTENTIAL THEORY AND CONSERVATIVE FIELDS. CENTRAL FORCES. OSCILLATORY SYSTEMS. RIGID BODY MOTION AND RELATIVISTIC MECHANICS.  
COREQUISITE: MATHEMATICS 270  
PREPFOUISITE: PHYSICS 211 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS.  
STAFF  
3 CREDITS

PHYSIC 321 THEORY OF ELECTRICITY AND MAGNETISM I  
BASIC CONCEPTS OF ELECTRIC AND MAGNETIC FIELDS. ELECTROSTATICS. MAGNETOSTATICS. ELECTRIC CURRENTS. ELECTROMAGNETISM. DEVELOPMENT OF MAXWELL'S EQUATIONS AND SIMPLE APPLICATIONS. PHYSICAL OPTICS. REFLECTION. DISPERSION. POLARIZATION AND DIFFRACTION.  
COREQUISITE: MATHEMATICS 240. PHYSICS 312 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
STAFF  
3 CREDITS

PHYSIC 322 THEORY OF ELECTRICITY AND MAGNETISM II  
A CONTINUATION OF PHYSICS 321. DESCRIPTION OF THE PHENOMENA OF ELECTRICITY AND MAGNETISM IN MATHEMATICAL TERMS. BOUNDARY VALUE PROBLEMS AND BOUNDARY CONDITIONS. TRANSMISSION LINES. WAVE GUIDES. RADIATION FROM A MOVING CHARGE. SPECIAL RELATIVITY.  
PREPFOUISITE: PHYSICS 321. MATHEMATICS 270  
3 LECT HRS  
STAFF  
3 CREDITS

PHYSIC 350 STATISTICAL PHYSICS  
TOPICS IN HEAT, THERMODYNAMICS, KINETIC THEORY, AND ELEMENTARY STATISTICAL MECHANICS.  
PREPFOUISITE: PHYSICS 312 OR PERMISSION OF INSTRUCTOR.  
3 LECT HRS.  
MR. ANTONOFF  
3 CREDITS

PHYSIC 371 BASIC ELECTRONICS WITH LAB  
DIRECT CURRENT CIRCUITS. ELECTRICAL MEASUREMENTS. ALTERNATING CURRENT CIRCUITS. CIRCUIT ANALYSIS. DIODES, RECTIFIER CIRCUITS, FILTERS. VOLTAGE REGULATORS. VACUUM TUBES. TRANSISTORS. AMPLIFIER CIRCUITS. OSCILLATORS. COMPARISON MEASUREMENTS. ELEMENTS OF SERVO SYSTEMS. OPERATIONAL AMPLIFIERS. PULSE AMPLIFIERS - TO BE COVERED IN LECTURES. NOTE - STUDENTS MAY NOT BE GRANTED CREDIT FOR BOTH PHYSICS 361 AND 371.  
PREPFOUISITE: PHYSICS 114. 172 OR 182  
1 LECT HR. 4 LAB HRS  
STAFF  
3 CREDITS

PHYSIC 374 SELECTED TOPICS IN ELECTRONICS  
CONCEPTS OF DIGITAL MEASUREMENTS. COUNTING. TIMING AND SWITCHING. DIODE CIRCUITS. BASIC LOGIC CONCEPTS. BASIC THEOREMS IN BOOLEAN ALGEBRA. MANIPULATION OF LOGIC STATEMENTS. BINARY INFORMATION GATES. APPLICATION OF LOGIC GATES. FLIP-FLOPS AND MULTIVIBRATORS. COUNTERS. REGISTERS AND DECODER. DIGITAL. ANALOG-DIGITAL INSTRUMENTS. AND SYSTEMS.  
PREPFOUISITE: PHYSICS 371.  
3 LECT HRS  
STAFF  
3 CREDITS

PHYSIC 381 INTERMEDIATE LABORATORY I, II  
382 EXPERIMENTS IN GEOMETRICAL AND PHYSICAL OPTICS, ELECTRONICS, ATOMIC PHYSICS, NUCLEAR PHYSICS. INDIVIDUAL PROGRAM OF EXPERIMENTS FOR EACH STUDENT ACCORDING TO HIS INTERESTS AND PREVIOUS EXPERIENCE.  
COREQUISITE: PHYSICS 281 OR 282.  
4 LAB HRS  
STAFF  
2 CREDITS

PHYSIC 471 ATOMIC PHYSICS AND INTRODUCTION TO QUANTUM MECHANICS  
THE FUNDAMENTAL AND ELEMENTARY APPLICATIONS OF QUANTUM MECHANICS WITH EMPHASIS ON PHYSICAL CONTENT RATHER THAN FORMALISM. ELEMENTARY WAVE MECHANICS DEVELOPED AND APPLIED TO SIMPLE ATOMIC STRUCTURE. TOPICS INCLUDE SPECTROSCOPIC AND OTHER PHENOMENA WHICH FORM THE EXPERIMENTAL BASIS OF MODERN ATOMIC PHYSICS. THE ROLE OF THE PAULI PRINCIPLE AND SPIN IN DETERMINING PERIODIC ATOMIC PROPERTIES. RADIATION PHENOMENA.  
PREPFOUISITE: PHYSICS 312 OR PERMISSION OF INSTRUCTOR.  
3 LECT HRS  
STAFF  
3 CREDITS

PHYSIC 472 NUCLEAR AND PARTICLE PHYSICS  
A CONTINUATION OF PHYSICS 421. THE BASIC PROPERTIES OF NUCLEI. PARTICLE SCATTERING. RADIOACTIVITY. NUCLEAR STABILITY. DYNAMICS OF NUCLEAR REACTIONS. POTENTIAL WELL AND BARRIER PROBLEM IN QUANTUM MECHANICS. PARTICLES.  
PREPFOUISITE: PHYSICS 421  
3 LECT HRS  
STAFF  
3 CREDITS

PHYSIC 430 INTRODUCTION TO SOLID STATE PHYSICS.  
AN INTRODUCTORY TREATMENT OF THE PHYSICS OF SOLIDS.  
PREPFOUISITE: PHYSICS 350 AND 421.  
3 LECT HRS  
STAFF  
3 CREDITS

PHYSIC 479 READINGS IN PHYSICS I, II  
480 SUPERVISED INDIVIDUAL STUDY OF SPECIAL TOPICS IN PHYSICS THAT ARE NOT AVAILABLE IN REGULAR COURSE.  
PREPFOUISITE: JUNIOR STANDING. APPROVAL OF PLAN OF STUDY BY SUPERVISING INSTRUCTOR AND BY DEPARTMENT CHAIRPERSON  
HRS BY ARRANGEMENT  
STAFF  
1-3 CREDITS

PHYSIC 481 ADVANCED LABORATORY  
482 EXPERIMENTAL WORK IN A VARIETY OF FIELDS SELECTED TO MEET THE NEEDS OF THE STUDENT.  
PREPFOUISITE: PHYSICS 371 OR 381 OR 382 OR PERMISSION OF INSTRUCTOR.  
6 LAB HOURS  
3 CREDITS

PHYSIC 487 RESEARCH IN PHYSICS  
88 SUPERVISED RESEARCH.  
PREPFOUISITE: JUNIOR STANDING AND APPROVAL BY SUPERVISING INSTRUCTOR AND DEPARTMENT CHAIRPERSON  
HRS BY ARRANGEMENT  
STAFF  
1-3 CREDITS

POLISH  
POLISH 101 ELEMENTARY POLISH I  
FOR STUDENTS WITH NO PREVIOUS KNOWLEDGE OF POLISH. DEVELOPMENT OF THE FOUR LANGUAGE SKILLS. BASED ON AN AUDIO-LINGUAL APPROACH.  
4 LECT HRS. 2 LAB HRS  
MR. OICK  
4 CREDITS



- POLISH 102 ELEMENTARY POLISH II  
A CONTINUATION OF POLISH 101. FOR STUDENTS WITH NO PREVIOUS KNOWLEDGE OF POLISH. DEVELOPMENT OF THE FOUR LANGUAGE SKILLS, BASED ON AN AUDIO-LINGUAL APPROACH.  
4 LECT HRS, 2 LAB HRS  
MR. DICK 4 CREDITS
- POLISH 201 INTERMEDIATE POLISH I  
AN INTENSIVE REVIEW OF GRAMMAR AND PRACTICE IN SPEAKING, HEARING, READING AND WRITING.  
PREREQUISITE-POLISH 102  
4 LECT HRS  
MR. DICK 4 CREDITS
- POLISH 202 INTERMEDIATE POLISH II  
AN INTENSIVE REVIEW OF GRAMMAR AND PRACTICE IN SPEAKING, HEARING, READING AND WRITING.  
PREREQUISITE-POLISH 201  
4 LECT HRS  
MR. DICK 4 CREDITS
- POLITICS  
Graduation Requirements  
Politics majors are required to take Politics 122 and 123 and eight courses above the introductory level. At least one upper level course should come from each of these four fields: American government and politics; comparative government and politics; international relations; political theory. With the approval of a student's advisor, cognate courses may be substituted for two of the eight upperclass politics courses. Majors with a cumulative average of at least 3.0 may, with the approval of the department, write a senior thesis. They should register for Politics 490/491.
- POLITCS 122 GOVERNMENT AND POLITICS OF THE UNITED STATES  
THE THREE MAIN BRANCHES OF THE NATIONAL GOVERNMENT, FEDERALISM, POLITICAL PARTIES AND INTEREST GROUPS. AND GOVERNMENTAL FUNCTIONS.  
3 LECT HRS  
STAFF 4 CREDITS
- POLITCS 123 POLITICAL IDEAS OF THE TWENTIETH CENTURY  
MAJOR POLITICAL VIEWPOINTS OF THE PRESENT, INCLUDING CONSERVATISM, LIBERALISM, MARXISM AND FASCISM.  
3 LECT HRS  
STAFF 4 CREDITS
- POLITCS 124 TOPICS IN POLITICAL ANALYSIS  
AN INTRODUCTION TO THE STUDY OF POLITICS THROUGH THE EXAMINATION OF SELECTED CASE PROBLEMS FROM A VARIETY OF AREAS. TOPICS WILL CHANGE FROM INSTRUCTOR TO INSTRUCTOR, AND FROM YEAR TO YEAR.  
3 LECT HRS  
STAFF 4 CREDITS
- POLITCS 200 COMPARATIVE POLITICS  
INTRODUCTORY STUDY OF FOREIGN POLITICAL SYSTEMS. EXAMINES INDUSTRIAL AND THIRD-WORLD SYSTEMS, AND FOCUSES ON COMPARATIVE PATTERNS OF POLITICAL CHANGE.  
3 LECT HRS  
MR. HUEY 3 CREDITS
- POLITCS 220 INTERNATIONAL RELATIONS  
ANALYSIS OF THE BASIC PRINCIPLES AND CONCEPTS WHICH EXPLAIN THE BEHAVIOR OF STATES AS THEY INTERACT WITH EACH OTHER. EXAMINATIONAL OF THE STRUGGLE FOR POWER AND THE SEARCH FOR ORDER IN HISTORICAL AND CONTEMPORARY PERSPECTIVE. SPECIAL ATTENTION TO: THE CAUSES, FUNCTIONS, AND EFFECTS OF WAR; THE ROLE OF POWER, NATIONAL INTEREST, FOREIGN POLICY-MAKING, NATIONALISM, THE THIRD WORLD, IDEOLOGY AND TECHNOLOGY IN INTERNATIONAL
- AL POLITICS: EMERGING PATTERNS OF TRANSNATIONAL INTERDEPENDENCE.  
3 LECT HRS  
MR. POSNER, MR. VANNICELLI 3 CREDITS
- POLITCS 230 INTRODUCTION TO POLITICAL ANALYSIS  
THE PRINCIPAL TOPICS WILL INCLUDE PHILOSOPHICAL FOUNDATIONS TO POLITICAL SCIENCE, RESEARCH METHODS, AND STATISTICAL APPROACHES.  
3 LECT HRS  
MR. WARD 3 CREDITS
- POLITCS 303 PUBLIC POLICY I  
POLITICAL ASPECTS OF SOCIAL AND ECONOMIC POLICIES IN THE UNITED STATES. ANALYSIS OF BOTH EMPIRICAL AND NORMATIVE FACTORS IN THE FORMATION OF PUBLIC POLICY.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
MR. WOLMAN 3 CREDITS
- POLITCS 305 STRATEGY OF POLITICAL CHANGE  
AN EXAMINATION OF SIGNIFICANT STRUGGLES OVER PUBLIC POLICY CHANGE. THESE WILL INCLUDE SUCH QUESTIONS AS INCOME MAINTENANCE, CHILD CARE, SCHOOL DESEGREGATION, AND REVENUE SHARING.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
MR. EDELMAN 3 CREDITS
- POLITCS 307 POLITICAL CHANGE AND GROUP IDENTITY  
THE COURSE WILL BE CONCERNED WITH THE IMPACT OF GROUP IDENTITY - RACIAL, TRIBAL, RELIGIOUS, ETHNIC, NATIONAL - ON POLITICAL SYSTEMS IN THE DEVELOPING AND DEVELOPED COUNTRIES.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
MR. LOUNDS 3 CREDITS
- POLITCS 309 POLITICAL BEHAVIOR  
INTRODUCTION TO THE STUDY OF POLITICAL BEHAVIOR, INCLUDING RELATIONSHIPS BETWEEN CHARACTEROLOGICAL ELEMENTS AND POLITICAL ATTITUDES AND ACTIONS, PROCESSES BY WHICH SOCIETIES TEACH MEMBERS TO BEHAVE POLITICALLY, AND NATIONAL DIFFERENCES IN POLITICAL SOCIALIZATION.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
MR. PATTERSON 3 CREDITS
- POLITCS 311 POLITICAL PARTIES  
THE AMERICAN POLITICAL PROCESS, WITH EMPHASIS ON POLITICAL PARTIES, PRESSURE GROUPS AND PUBLIC OPINION.  
PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS  
MR. GOODWIN 3 CREDITS
- POLITCS 315 POLITICAL DECISION-MAKING  
THE WAY IN WHICH DECISION-MAKING IS SHAPED BY THE POLITICAL ENVIRONMENT IN BOTH THE PUBLIC AND PRIVATE SECTORS.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
MS. KAYDEN 3 CREDITS
- POLITCS 319 THE LEGISLATIVE PROCESS  
THE FUNCTION OF NATIONAL AND STATE LEGISLATURES, AND THE ROLE PLAYED BY POLITICAL PARTIES AND INTEREST GROUPS IN THE LEGISLATURE.  
PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS  
MR. GOODWIN 3 CREDITS
- POLITCS 324 THE AMERICAN PRESIDENCY  
THE POWERS, THE LIMITATIONS, AND THE ORGANIZATION OF THE PRESIDENCY IN THE AMERICAN SYSTEM OF GOVERNMENT.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
MR. BEARD 3 CREDITS

- POLICS 325 PUBLIC ADMINISTRATION  
THE BUREAUCRATIC PROCESS. EMPHASIZING ORGANIZATIONAL BEHAVIOR, CHANGES IN ADMINISTRATIVE INSTITUTIONS AND THEORIES, AND THE POLITICAL ROLE OF BUREAUCRACY.  
PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS  
MR. BEARD  
3 CREDITS
- POLICS 327 PUBLIC MANAGEMENT  
THIS COURSE EXPLORES THE DIMENSIONS OF GOVERNMENT ORGANIZATIONS AS THEY ATTEMPT TO ATTAIN THEIR POLITICALLY APPROVED GOALS WHILE MAINTAINING THEIR OWN INTEGRITY. POLITICAL BUREAUCRACIES IN MASSACHUSETTS WILL PROVIDE THE MAJOR SOURCE MATERIALS FOR STUDY.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
MR. HAMILTON  
3 CREDITS
- POLICS 328 PUBLIC MANAGEMENT II  
PREREQUISITE: POLITICS 327 OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
3 CREDITS
- POLICS 329 AMERICAN CONSTITUTIONAL LAW AND THEORY  
THE DEVELOPMENT OF THE UNITED STATES CONSTITUTION. CHIEFLY THROUGH DECISIONS OF THE SUPREME COURT. EMPHASIS ON THE ORIGIN AND NATURE OF JUDICIAL POWERS. THE WAY IT INHERITS AND FACILITATES OPERATION OF THE POLITICAL PROCESS AND THE SEARCH FOR STANDARDS BY WHICH TO JUDGE THE JUDGES.  
PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS  
MR. STEAMER  
3 CREDITS
- POLICS 337 CIVIL LIBERTIES IN THE UNITED STATES  
AN ANALYSIS OF THE CONSTITUTIONAL RULES GOVERNING CIVIL LIBERTIES IN THE AMERICAN SYSTEM. PRIMARILY THROUGH DECISIONS OF THE SUPREME COURT. EMPHASIS ON FOUR AREAS: FREEDOM OF PRESS AND SPEECH, FREEDOM OF RELIGION, RIGHTS OF PERSONS SUSPECTED OR ACCUSED OF A CRIME, AND THE DEVELOPMENT OF STATUS OF RIGHTS OF BLACKS AND OTHER MINORITIES.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
MR. STEAMER  
3 CREDITS
- POLICS 335 THE FEDERAL SYSTEM  
CONSEQUENCES OF A REAL DIVISION OF POWER FOR POLITICS AT NATIONAL, STATE AND LOCAL LEVELS.  
PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS  
STAFF  
3 CREDITS
- POLICS 337 STATE AND LOCAL POLITICS  
THE DYNAMICS AND INTERRELATIONSHIPS OF STATE AND LOCAL GOVERNMENTAL UNITS. EMPHASIZING LEADERSHIP RESOURCES AND POLITICAL CHANGE.  
PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS  
STAFF  
3 CREDITS
- POLICS 338 MASSACHUSETTS POLITICS  
A STUDY OF STATE AND LOCAL GOVERNMENT AND POLITICS IN MASSACHUSETTS. EMPHASIZING ITS UNIQUE FEATURES AS WELL AS ITS SIMILARITIES TO OTHER STATE SYSTEMS.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
MR. DONAHUE  
3 CREDITS
- POLICS 341 METROPOLITAN POLITICS  
MUNICIPAL POLITICS. ORGANIZATION AND FUNCTIONS. SPECIAL REFERENCES TO IMPACT OF RECENT SOCIAL AND ECONOMIC CHANGES UPON CITY, SUBURBAN AND INTERGOVERNMENTAL POLITICS IN METROPOLITAN REGIONS.  
PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS  
MS. PAUL  
3 CREDITS

- POLICS 344 PROBLEMS OF URBAN POLITICS  
SOME OF THE PHILOSOPHICAL ISSUES RAISED BY URBANIZATION--ARE CITIES NECESSARY AND IS THE RELATIVELY DEMOCRATIC STRUCTURE OF THE AMERICAN CITIES RESPONSIBLE FOR SOME OF THEIR PROBLEMS AND HAS THERE BEEN A REVOLUTION OF RISING EXPECTATIONS IN URBAN LIFE. CONSIDERED IN HISTORICAL AND COMPARATIVE PERSPECTIVES.  
PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS  
MS. PAUL  
3 CREDITS
- POLICS 351 THE POLITICS OF NATIONAL DEVELOPMENT  
THE EXTENT TO WHICH ELEMENTS OF THE THIRD WORLD HAVE PROGRESSED FROM STATEHOOD TO NATIONHOOD DURING THE QUARTER CENTURY FOLLOWING THE GREAT ANTICOLONIAL REVOLUTION.  
PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS  
MR. HEICHMAN  
3 CREDITS
- POLICS 353 EUROPEAN POLITICAL DEVELOPMENT  
AN EXAMINATION OF THE EFFECTS OF REVOLUTION, INDUSTRIALISM AND SOCIAL AND CULTURAL CHANGE ON THE POLITICAL INSTITUTIONS OF ENGLAND, FRANCE AND GERMANY IN THE NINETEENTH CENTURY. THE MODERNIZATION OF GOVERNMENT AND ADMINISTRATION. ELECTORAL REFORM. CLASS AND PARTY POLITICS. WILL BE AMONG THE TOPICS CONSIDERED FROM THE PERSPECTIVE OF THEIR CONTRIBUTION TO THE ESTABLISHMENT OF DEMOCRACY.  
PREREQUISITE: ANY COURSE IN MODERN EUROPEAN HISTORY.  
3 LECT HRS  
MR. SIMMONS  
3 CREDITS
- POLICS 354 POSTWAR EUROPEAN PROBLEMS  
A COMPARATIVE REVIEW OF POSTWAR PROBLEMS IN EUROPE - POSTWAR RECOVERY PARTIES AND INSTITUTIONS DEFENSE, MULTINATIONAL CORPORATIONS, AND POLITICAL OPPOSITION.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
MR. POSNER  
3 CREDITS
- POLICS 355 COMPARATIVE RURAL POLITICS  
AN ADVANCED COURSE TO INVESTIGATE THE POLITICS OF NON-URBAN PEOPLES AROUND THE WORLD. ESPECIALLY PEASANTS. DISCUSSION WILL FOCUS ON THE IMPLICATIONS OF RURAL AND PEASANT LIFE FOR SOCIAL AND POLITICAL CHANGE.  
REPORTS IN CLASS.  
PREREQUISITE: POLITICS 200 OR EQUIVALENT  
3 LECT HRS  
MR. HUEY  
3 CREDITS
- POLICS 356 COMPARATIVE PUBLIC ADMINISTRATION  
AN EXAMINATION OF THE RELATIONSHIP OF BUREAUCRACY TO DEMOCRATIC OBJECTIVES IN THE CONTEXT OF ADVANCED INDUSTRIAL SOCIETY. WITH CASE STUDIES DRAWN FROM THE UNITED STATES, SOVIET UNION, YUGOSLAVIA AND ISRAEL.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
MS. FINE  
3 CREDITS
- POLICS 360 GOVERNMENT AND POLITICS OF BRITAIN  
POLITICAL INSTITUTIONS AS THEY EXIST IN THE LAND OF ULTRASTABILITY. SOCIAL ACCOMMODATION AND CIRCULATORY ELITISM. COMPARISONS WITH INSTITUTIONS IN OTHER WESTERN DEMOCRACIES.  
PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS  
MR. BEICHMAN  
3 CREDITS
- POLICS 363 GOVERNMENT AND POLITICS OF THE SOVIET UNION  
THE HISTORICAL AND IDEOLOGICAL ORIGINS OF THE SOVIET UNION. THE ROLE OF THE COMMUNIST PARTY IN SOVIET SOCIETY. INTEREST GROUPS IN THE SOVIET UNION AND THE NATURE OF SOVIET SOCIETY TODAY.  
PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS  
MR. LIEBERMAN  
3 CREDITS
- POLICS 365 FORMS OF DOMINATION IN CONTEMPORARY CAPITALIST SOCIETY  
AN EXAMINATION AND CRITIQUE OF THE WAYS IN WHICH POWER IS EXERCISED



IN ADVANCED CAPITALIST SOCIETIES, CONCENTRATING ON THE INSTRUMENTS OF THE STATE, THE MARKET, AND CULTURE.

3 LECT HRS 3 CREDITS  
MR. SIMONDS

#### POLTCS 371 LATIN AMERICAN GOVERNMENT

AN ANALYSIS OF SOCIAL STRUCTURE AND POLITICAL BEHAVIOR OF VARIOUS GROUPS IN LATIN AMERICA, OF A VARIETY OF FORMS OF POLITICAL PARTICIPATION AT GRASS ROOTS AND NATIONAL LEVELS, AND OF THE INFLUENCE OF TECHNOLOGICALLY ADVANCED COUNTRIES ON THE POLITICS OF LATIN AMERICA.

PREREQUISITE: JUNIOR STANDING  
3 LECT HRS 3 CREDITS  
MR. SPENCE

#### POLTCS 387 EAST ASIAN REVOLUTIONS

A STUDY OF THE CHINESE REVOLUTION OF THE 20TH CENTURY AND CONTEMPORARY CHINESE GOVERNMENT

PREREQUISITE: JUNIOR STANDING  
3 LECT HRS 3 CREDITS  
MR. HUFY

#### POLTCS 388 REVOLUTION IN SOUTHEAST ASIA

CONCENTRATES ON THE EXPERIENCE OF THE VIETNAMESE REVOLUTION OF THE PAST 20 YEARS, COMPARING IT WITH POLITICAL DEVELOPMENTS IN OTHER SOUTH EAST ASIAN COUNTRIES.

PREREQUISITE: JUNIOR STANDING  
3 LECT HRS 3 CREDITS  
MR. HUFY

#### POLTCS 391 GOVERNMENT AND POLITICS OF AFRICA

AFRICAN GOVERNMENT AND POLITICS WITH EMPHASIS ON STABILITY IN AFRICAN POLITICAL SYSTEMS AND ON THE ROLE OF TRIBES, POLITICAL PARTIES, ARMIES AND GOVERNMENT BUREAUCRACIES.

PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS 3 CREDITS  
MR. KANZA

#### POLTCS 392 A CONTINUATION OF POLITICS OF AFRICA

EMPHASIS ON STABILITY IN AFRICAN POLITICAL SYSTEMS AND ON THE ROLE OF TRIBES, POLITICAL PARTIES, ARMIES, AND GOVERNMENT BUREAUCRACIES.

PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS 3 CREDITS  
MR. KANZA

#### POLTCS 402 WORLD POLITICS AND WORLD ORDER

THE STUDY OF RECENT DEVELOPMENTS IN INTERNATIONAL LAW AND ORGANIZATION, REGIONALISM, THE POLITICS OF ECONOMIC INTERDEPENDENCE, AND ARMS CONTROL WITH EMPHASIS ON THE UNITED NATIONS SYSTEMS AND THE EUROPEAN COMMUNITIES. EXAMINATION OF STRATEGIES FOR DEALING WITH INTERNATIONAL CONFLICT.

PREREQUISITE: POLITICS 220 (INTERNATIONAL RELATIONS) OF PERMISSION OF INSTRUCTOR  
3 LECT HRS 3 CREDITS  
MR. POSNER

#### POLTCS 411 INTERNATIONAL ORGANIZATIONS I

THE DEVELOPMENT OF INTERNATIONAL ORGANIZATIONS AS A RESPONSE TO THE NEEDS OF THE INTERNATIONAL COMMUNITY, AND AS A FUNCTIONAL APPROACH TO WORLD PEACE. EMPHASIS ON THE UNITED NATIONS AND ITS SPECIALIZED AGENCIES.

PREREQUISITE: JUNIOR STANDING  
3 LECT HRS 3 CREDITS  
MR. KANZA

#### POLTCS 412 INTERNATIONAL ORGANIZATIONS II

CONTINUATION OF POLITICS 411, EMPHASIZING REGIONAL POLITICAL AND ECONOMIC ORGANIZATIONS, AND THE ADMINISTRATION OF INTERNATIONAL RELATIONS.

PREREQUISITE: JUNIOR STANDING  
3 LECT HRS 3 CREDITS  
MR. KANZA

#### POLTCS 415 LAW AND INTERNATIONAL RELATIONS

AN EXAMINATION OF THE PRIMARY FUNCTIONS OF LAW IN INTERNATIONAL RELATIONS, AND THE WAY IN WHICH LAW OPERATES IN INTERNATIONAL PRACTICE. MAJOR ISSUES COVERED INCLUDE THE ROLE OF LAW IN THE CONTROL OF THE USE OF FORCE BY NATIONS, BOTH HISTORICALLY AND IN RELATION TO THE CURRENT INTERNATIONAL SCENE, AND THE CHANGES IN LAW RELATING TO PRIVATE ECONOMIC ACTIVITY SUCH AS THE LAW OF THE SEA, RESPONSIBILITY FOR THE PROTECTION OF THE ENVIRONMENT, AND NATIONAL CONTROL OF CORPORATIONS. COURSE WORK BASED ON BOTH CASEBOOK AND TEXT MATERIALS.

PREREQUISITE: JUNIOR STANDING  
3 LECT HRS 3 CREDITS  
MS. GARNON

#### POLTCS 416 INTERVENTION IN INTERNATIONAL LAW

A STUDY OF THE LEGAL NORMS DEFINING THE PROBLEM OF INTERFERENCE BY OUTSIDE FORCES IN THE INTERNAL AFFAIRS OF A STATE, INCLUDING QUESTIONS OF INTERFERENCE BY OTHER STATES, BY INTERNATIONAL ORGANIZATIONS, AND BY PRIVATE CORPORATIONS.

PREREQUISITE: JUNIOR STANDING  
3 LECT HRS 3 CREDITS  
MS. GARNON

#### POLTCS 420 IMPERIALISM

THIS COURSE IS DESIGNED TO EXAMINE THE VARIOUS PURPOSES (ECONOMIC, POLITICAL, SOCIAL, CULTURAL) SERVED BY POLICIES OF IMPERIALISM IN BOTH ITS AVERT AND AMBIGUOUS FORMS, AS AN ASPECT OF INTERNATIONAL RELATIONS IN THE NINETEENTH AND TWENTIETH CENTURIES - THAT IS, THE ERA MARKED ECONOMICALLY BY AN INTERNATIONAL PROCESS OF INDUSTRIALIZATION, COURSE MATERIAL CONSISTS OF ANALYSES AND EXPLANATIONS OF THE IMPERIALIST PHENOMENON ADVANCED BY BOTH THEORETICIANS, MARXIST AND LIBERAL, AND PRACTITIONERS.

PREREQUISITE: JUNIOR STANDING  
3 LECT HRS 3 CREDITS  
MS. GARNON

#### POLTCS 424 AMERICAN FOREIGN POLICY

MAJOR ISSUES AND PROBLEMS OF AMERICAN FOREIGN POLICY IN THE CONTEMPORARY WORLD. THE DOMESTIC SOURCES OF FOREIGN POLICY.

PROBLEMS EXAMINED WILL VARY FROM YEAR TO YEAR.  
PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS 3 CREDITS  
MR. POSNER

#### POLTCS 430 SOVIET UNION FOREIGN POLICY

TOPICS INCLUDE CONTINUITY AND CHANGE IN RUSSIAN AND SOVIET FOREIGN POLICY, THE ROLE OF IDEOLOGY AND NATIONAL INTEREST, THE ORIGIN OF THE COLD WAR, THE SINO-SOVIET DISPUTE AND SOVIET-EAST EUROPEAN RELATIONS.

PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS 3 CREDITS  
MR. LIEBERMAN

#### POLTCS 451 ANCIENT AND MEDIEVAL POLITICAL THOUGHT

THE ORIGINS AND THE EARLY DEVELOPMENT OF THE MAIN POLITICAL IDEAS OF THE WEST.

PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS 3 CREDITS  
MR. WARD

#### POLTCS 452 MODERN POLITICAL THOUGHT

THE HISTORY OF WESTERN POLITICAL IDEAS FROM THE TIME OF MACHIAVELLI TO THAT OF MARX.

PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS 3 CREDITS  
MR. SIMONDS, MR. WARD

#### POLTCS 454 RECENT AND CONTEMPORARY POLITICAL THOUGHT

A STUDY OF TWENTIETH CENTURY POLITICAL AND SOCIAL THOUGHT WITH INCIDENTAL ATTENTION TO CERTAIN INFLUENTIAL THINKERS OF THE NINETEENTH CENTURY. THE DIFFERENCES AMONG THE VARIOUS SCHOOLS OF THOUGHT SUCH AS THE NEW LEFT, CONSERVATISM, BEHAVIORALISM, AND EXISTENTIALISM WILL BE STRESSED AND CRITICALLY EXAMINED.

3 LECT HRS 3 CREDITS  
MR. TINDOR



- POLICS 459 KAWL MADX  
AN INVESTIGATION OF THE ORIGINS OF MODERN CRITICAL SOCIAL THEORY  
THROUGH EXTENSIVE READING FROM MARX'S ENTIRE BODY OF WRITINGS.  
3 LECT HRS  
MR. SIMONDS  
3 CREDITS
- POLICS 462 SOCIALISM IN THE MODERN WORLD  
THE ORIGINS AND DOCTRINES OF MODERN SOCIALISM WITH PARTICULAR EM-  
PHASIS ON MARXIST-LENINIST THOUGHT. TOPICS INCLUDE UTOPIAN AND GUILD  
SOCIALISM, FABIANISM, SYNDICALISM, ITILISM, MARXIAN REVISIONISM,  
ANARCHISM, AND SOCIALISM IN THE UNITED STATES.  
PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS  
MR. LIFERMAN  
3 CREDITS
- POLICS 464 NEW LEFT POLITICS AND THEORY  
DURING THE FIRST HALF OF THE COURSE STUDENTS WILL BE EXPOSED TO THE  
MAJOR CURRENTS OF MARXIST THOUGHT IN THE TWENTIETH CENTURY, AS  
REPRESENTED PRIMARILY IN THE WRITINGS OF EAST AND WEST EUROPEAN  
MARXIST REVISIONISTS. THIS WILL PROVIDE THE BACKGROUND FOR THE SECOND  
HALF OF THE COURSE IN WHICH STUDENTS WILL RESEARCH THE POLITICAL  
MOVEMENTS KNOWN AS THE NEW LEFT IN FRANCE, ITALY, AND THE UNITED  
STATES.  
3 LECT HRS  
MS. FINE  
3 CREDITS
- POLICS 465 WOMEN IN REVOLUTIONS  
THE COURSE IS DESIGNED TO EXPLORE TWO INTERRELATED PROBLEMS:  
1. THE CONTENT OF TRADITIONAL MARXIST THEORY AND THE WOMAN QUESTION.  
AND ITS IMPACT ON SOME NOW FAMOUS BOLSHIEVIST WOMEN WHO BECAME  
REVOLUTIONARY ACTIVISTS. AND 2. THE SPECIAL POLITICAL AND PERSONAL  
CHOICES FACING BY THESE WOMEN WHO WERE OPPOSITIONISTS ALONG SEVERAL  
DIMENSIONS: POLITICALLY (BY ADOPTING A MARXIST FRAMEWORK FOR THEIR  
PRAXIS), OFTEN AGAINST THEIR CLASS OF ORIGIN, AND BY VIRT OF THEIR  
SEX.  
PREREQUISITE: INTRO POLITICS OR HISTORY COURSE  
3 LECT HRS  
MS. FINE  
3 CREDITS
- POLICS 468 AMERICAN POLITICAL THOUGHT  
AN ANALYTICAL AND HISTORICAL STUDY OF THE DEVELOPMENT OF AMERICAN  
POLITICAL THOUGHT AND INSTITUTIONS FROM COLONIAL TIMES. PRIMARY  
SOURCE READINGS FEATURE THE IDEAS AND DEEDS OF THOSE WHO HAVE SHAPE  
THE AMERICAN CONCEPT OF FREE GOVERNMENT.  
PREREQUISITE: JUNIOR STANDING.  
3 LECT HRS  
MS. PAUL  
3 CREDITS
- POLICS 470 CHRISTIANITY AND POLITICS  
REFLECTION ON POLITICAL PROBLEMS AS SEEN FROM VARIOUS CHRISTIAN  
STANDPOINTS. CURRENT PROBLEMS, AND CONTEMPORARY RECENT CHRISTIAN  
THINKERS, WILL BE EMPHASIZED. PARTICULAR ATTENTION WILL BE PAID TO  
THE DIVERSITY OF INSIGHTS THAT CHRISTIANITY MAKES AVAILABLE AND IN  
THE OCCASIONS FOR CRITICAL REFLECTION THAT ARE THUS PROVIDED.  
PREREQUISITE: JUNIOR STANDING  
3 LECT HRS  
MR. TINDER  
3 CREDITS
- POLICS 477 SPECIAL TOPICS IN POLITICS  
INTENSIVE STUDY OF TOPICS IN POLITICS. COURSE CONTENT AND CREDIT WILL  
VARY EACH SEMESTER AND WILL BE ANNOUNCED DURING THE ADVANCE  
REGISTRATION PERIOD. FULFILLS SOCIAL SCIENCE CORE REQUIREMENT.  
HRS BY ARRGT  
STAFF  
1-3 CREDITS
- POLICS 478 INDEPENDENT STUDY  
A COURSE OF READING AND INVESTIGATION DESIGNED TO SUPPLEMENT REGULAR  
DEPARTMENT OFFERINGS. TOPICS WILL BE WORKED OUT BY INSTRUCTOR AND  
STUDENT. REGULAR PAPERS WILL BE REQUIRED.  
HRS BY ARRANGEMENT  
STAFF  
3 CREDITS

- POLICS 480 SEMINAR  
481 INTENSIVE STUDIES IN VARIOUS IMPORTANT FIELDS IN POLITICS, EMPHASIS  
ON INDEPENDENT RESEARCH, BY INVITATION OF DEPARTMENT.  
3 LECT HRS  
STAFF  
3 CREDITS
- POLICS 484 SPECIAL PROBLEMS IN THE FIELD OF POLITICS  
485 SEMINAR IN THE FIELD OF PRACTICAL POLITICS GENERALLY TAUGHT BY  
PROFESSIONAL POLITICIANS, BY INVITATION OF DEPARTMENT.  
3 LECT HRS  
STAFF  
3 CREDITS
- POLICS 486 SEMINAR-AFRICA AND WORLD POLITICS I  
INTENSIVE STUDY OF THE NEWLY INDEPENDENT STATES OF AFRICA AND THEIR  
IMPACT ON WORLD AFFAIRS.  
PREREQUISITE: POLITICS 391 OR 392 OR PERMISSION OF INSTRUCTOR.  
3 LECT HRS  
MR. KANZA  
3 CREDITS
- POLICS 487 SEMINAR - AFRICA AND WORLD POLITICS II  
A CONTINUATION OF PO 486. THIS SEMINAR WILL CONCENTRATE ON REGIONAL  
AFRICAN GROUPINGS, THE CONCEPT OF AFRICAN UNITY, THE IMPACT OF  
MULTI-NATIONAL CORPORATIONS, AND THE EFFECT OF FOREIGN AID AND  
TECHNICAL ASSISTANCE.  
PREREQUISITE: JUNIOR STANDING AND PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. KANZA  
3 CREDITS
- POLICS 488 FIELD WORK IN POLITICS I II  
489 CAREFULLY SUPERVISED FIELD WORK. AVAILABLE ONLY TO A LIMITED NUMBER  
OF QUALIFIED STUDENTS IN ANY ONE SEMESTER. WRITTEN PROSPECTUS OF THE  
PROJECT, PERIODIC CONFERENCES WITH A FACULTY ADVISOR, AND APPROPRIATE  
WRITTEN WORK REQUIRED.  
PREREQUISITE: COMPLETION OF A RELEVANT COURSE, AND PERMISSION OF DEPT  
STAFF  
3 LECT HRS  
STAFF  
3 CREDITS
- POLICS 490 SPECIAL PROBLEMS  
491 GUIDED READING IN SPECIAL AREAS OF POLITICS. MAY BE USED FOR HONORS  
THESIS. BY INVITATION OF DEPARTMENT.  
HRS BY ARRANGEMENT  
STAFF  
3 CREDITS
- POLICS 492 DIRECTED READING IN POLITICS  
493 READING OF 4-6 BOOKS ON A SPECIAL TOPIC AND PREPARATION OF A 10-15  
PAGE CRITICAL ANALYSIS. LISTS OF TOPICS AND PERTINENT READINGS WILL  
BE PREPARED BY INDIVIDUAL FACULTY MEMBERS. UPON COMPLETION OF A  
PROJECT, STUDENTS WILL SUBMIT THE REQUIRED PAPER FOR DEPARTMENTAL  
EVALUATION (ON A PASS-FAIL BASIS ONLY). LIMITED TO ONE PROJECT  
PER ACADEMIC YEAR.  
PREREQUISITE: JUNIOR STANDING OR DEPARTMENTAL PERMISSION  
HRS BY ARRANGEMENT  
STAFF  
1 CREDIT
- POLICS 590 FIELD PRACTICUM IN POLITICS  
PREREQUISITE: APPROVAL OF POLITICS DEPARTMENT  
HRS BY ARRANGEMENT  
STAFF  
9 CREDITS
- PORTUGUESE  
PORT 101 ELEMENTARY PORTUGUESE I  
ACQUISITION OF BASIC SKILLS IN COMPREHENDING SPEAKING, READING AND  
WRITING USING THE AUDIOLINGUAL APPROACH.  
4 LECT HRS, 1 LAB HR  
MS. PORTO-SLOVER  
4 CREDITS
- PORT 102 ELEMENTARY PORTUGUESE II  
ACQUISITION OF BASIC SKILLS IN COMPREHENDING SPEAKING, READING AND  
WRITING USING THE AUDIOLINGUAL APPROACH.  
PREREQUISITE: PORTUGUESE 101 OR EQUIVALENT  
4 LECT HRS, 1 LAB HR  
MS. PORTO-SLOVER  
4 CREDITS

PORT 201 INTERMEDIATE PORTUGUESE I  
 FURTHER DEVELOPMENT OF LANGUAGE SKILLS, WITH READINGS IN PORTUGUESE  
 AND BRAZILIAN LITERATURE AND CIVILIZATION.  
 PREREQUISITE-PORTUGUESE 102 OR EQUIVALENT  
 3 LECT HRS 1 LAB HOUR  
 MS. PORTO-SLOVER  
 4 CREDITS

PORT 202 INTERMEDIATE PORTUGUESE II  
 A CONTINUATION OF PORTUGUESE 201. FURTHER DEVELOPMENT OF LANGUAGE  
 SKILLS, WITH READINGS IN PORTUGUESE AND BRAZILIAN LITERATURE AND  
 CIVILIZATION.  
 PREREQUISITE-PORTUGUESE 201 OR EQUIVALENT  
 3 LECT HRS 1 LAB HOUR  
 MS. PORTO-SLOVER  
 4 CREDITS

PORT 304 ADVANCED PORTUGUESE I  
 INTENSIVE WORK IN CONVERSATION AND COMPOSITION, AND MASTERY OF THESE  
 SKILLS.  
 PREREQUISITE-PORTUGUESE 102 OR EQUIVALENT  
 3 LECT HRS  
 MS. PORTO-SLOVER  
 3 CREDITS

PORT 305 ADVANCED PORTUGUESE II  
 INTENSIVE WORK IN CONVERSATION AND COMPOSITION, AND MASTERY OF THESE  
 SKILLS.  
 3 LECT HRS  
 MS. PORTO-SLOVER  
 3 CREDITS

## PSYCHOLOGY

### GRADUATION REQUIREMENTS

College I: Psychology Majors are expected to take the introductory Psychology (101) offered by our department and pass with a grade of C or better; this course is a prerequisite of all other Psychology Courses. Research methods in Psychology I (211), which is a prerequisite of all laboratory courses in Psychology, is a prerequisite for all majors. In order to ensure breadth of training in Psychology, majors must distribute their courses within the various areas of Psychology in the following fashion. A minimum of two courses must be selected from the following three areas: Information processing (Psych 250, 255, 385, 390); Psychobiology (Psych 260, 265, 360, 361, 365); General Theory and Methods (Psych 212, 280, 380); and a minimum of two courses must be selected from the following three areas: Clinical Personality (Psych 200, 215, 220, 300, 315); Life-Span Developmental (Psych 240, 290, 340, 480); Social Psychology (Psych 230, 330, 333). At least three additional courses must be taken from any departmental offerings for a total of 28 credits in Psychology. (New major requirements effective for majors declaring after June 1, 1974.)

Cognitive credit toward the Psychology major is granted for Psychological Anthropology (Anthropology 254) and Philosophy and Psychoanalytic Psychology (Philosophy 375). Transfer courses approved by the Registrar are not automatically granted major credit. Transfer students seeking major credit for Psychology courses taken elsewhere should obtain the approval of the Curriculum Committee.

Majors who intend to apply to Graduate Departments of Psychology are strongly advised to take Systems of Psychology (Psych 380) and Research Methods in Psychology II (Psych 212).

Double majors must be approved by the Psychology Department Curriculum Committee and must fulfill the normal requirements listed above.

### INTERDISCIPLINARY PROGRAMS

Options other than the double major are becoming available to students who wish to combine their Psychology major with intensive work in other departments.

A. Students with a combined interest in Psychology and Philosophy may elect a directed major in Philosophy and Psychology. This major enables a student to set-up an integrated program of study in the two fields according to the following guidelines:

1. A minimum of 13 courses, 6 from each department, plus a course in directed study to be taken during the final year, are required.

Included in these are the following "Core Requirements"

Philosophy  
 100 - Introduction to Philosophy  
 104 - Introduction to Logic

Psychology  
 101 - Introduction to Psychology  
 211 - Research Methods and  
 Either  
 280 - History of Psychology  
 or

380 - Systems of Psychology

2. In each case of such a major, the student is required to plan out his or her program with a team of two advisors, one from each department. This needn't be done prior to taking any courses in each department, but should come close to the beginning of the student's stay at UNB. It should be understood that some courses a student may have taken in each department prior to setting-up such a major may not be included in courses that count toward this major, if both advisors feel they cannot be integrated into his or her course of study.

B. The Psychology Department offers several courses (Psych 260, 265, 266, 365) that will form an integral part of a proposed concentration in Biobehavioral Studies, now under development. This concentration is a joint effort of the departments of Anthropology, Biology, and Psychology, and will be open to majors in these departments.

C. The Psychology Department also contributes offerings to the Law and Justice Foundation Program.

### INDEPENDENT STUDY

Students interested in Independent Work (in the Laboratory, Field, or Library) should seek the consent of a supervising faculty member and have the project approved by the department before enrolling in Problems in Psychology (478, 479)

### HONORS

The requirements for receiving a diploma with honors in psychology are: 1. satisfactory completion of all U. Mass. and departmental requirements for graduation, 2. an overall 3.0 cumulative average, 3. a 3.2 cumulative average in all department work, 4. a grade of A in the two semester seniors honors courses (Psych 498, 499), 5. approval of the senior honors paper by the department's honors committee.

Students who intend to graduate in June of their senior year may apply to the Department's Honors Committee between Mid-May of their junior year and September 1st of their senior year. Students will be informed of their eligibility to participate in the senior honors program (Psych 498-499) by September 10th.

Students interested in Independent Research or Library study, who are not participants in the senior honors seminar, should enroll in Psych (478-479) (Problems in Psych) with the consent of a supervising departmental faculty member.

|       |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |       |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |
|-------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| PSYCH | 101 | GENERAL INTRODUCTION TO PSYCHOLOGY<br>A GENERAL SURVEY OF THE MAJOR AREAS OF RESEARCH WITHIN PSYCHOLOGY SUCH AS SENSATION AND PERCEPTION, LEARNING, INDIVIDUAL DIFFERENCES, PERSONALITY, SOCIAL AND DEVELOPMENTAL PROCESSES.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                         | 4 CREDITS | PSYCH | 233 | PSYCHOLOGY OF LANGUAGE<br>BEHAVIORAL AND PHYSIOLOGICAL APPROACHES TO THE PROCESSES UNDERLYING LANGUAGE AND THOUGHT, AND OF THE INTERRELATIONSHIPS BETWEEN THEM.<br>PREREQUISITE: PSYCHOLOGY 101 OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                    | 3 CREDITS |
| PSYCH | 102 | INTRODUCTION TO PSYCHOLOGICAL RESEARCH<br>BASIC METHODS USED BY PSYCHOLOGISTS IN THE SCIENTIFIC STUDY OF BEHAVIOR, EXPERIMENTAL, NATURALISTIC OBSERVATION, CLINICAL CASE-STUDY METHODS, ETC. WILL BE CONSIDERED. ELEMENTARY DESCRIPTIVE STATISTICS.<br>PREREQUISITE: PSYCHOLOGY 101<br>2 LECT HRS. 1.5 LAB HRS<br>MR. HYNES. MR. NIXON                                                                                                                                                                                                                                                                      | 3 CREDITS | PSYCH | 234 | ENVIRONMENTAL PSYCHOLOGY<br>INVESTIGATION OF THE EFFECTS OF THE PHYSICAL ENVIRONMENT ON PEOPLE AND VICE-VERSA. EXAMINATION OF SUCH ISSUES AS HOW DIFFERENT INDIVIDUALS AND GROUPS RESPOND TO THE PHYSICAL ENVIRONMENT; CITIZEN PARTICIPATION IN ENVIRONMENTAL PLANNING.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                        | 3 CREDITS |
| PSYCH | 200 | PERSONALITY<br>COMPARATIVE APPROACH TO PERSONALITY THEORIES OF ALLPORT, CATTELL, FREUD, MASLOW, MURRAY, KELLEY, EGO PSYCHOLOGISTS, SELF THEORISTS AND OTHERS. EMPHASIS UPON ACHIEVING A CONCEPTUAL FRAMEWORK CONTRIBUTING TOWARDS GREATER UNDERSTANDING OF HUMAN NATURE. PERSONALITY FUNCTIONING AND INDIVIDUAL DIFFERENCES. SELECTED TOPICS INCLUDE RESEARCH METHODS AND ASSESSMENT OF PERSONALITY.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>MR. COSTA. MR. RAMSEUR. MR. GAINES                                                                                                                    | 3 CREDITS | PSYCH | 235 | PSYCHOLOGY AND THE AFRICAN-AMERICAN EXPERIENCE<br>THIS COURSE IS AN EXAMINATION OF THEORY AND RESEARCH, PRIMARILY BY PSYCHOLOGISTS, THAT RELATES TO THE AFRICAN-AMERICAN EXPERIENCE. THE COURSE FOCUSES ON THE PSYCHOLOGICAL LITERATURE, BUT ALSO DRAWS UPON OTHER SOCIAL SCIENCE DISCIPLINES, CASE STUDIES, AND RELEVANT WORKS OF FICTION. MAJOR TOPICS OF THE COURSE ARE THE BLACK FAMILY AND CHILD DEVELOPMENT, BLACK IDENTITY AND PERSONALITY, BLACK SOCIAL ACTIVISM, AND THE DYNAMICS OF INDIVIDUAL AND INSTITUTIONAL RACISM.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>MR. RAMSEUR                                                                       | 3 CREDITS |
| PSYCH | 202 | HUMAN MOTIVES AND EMOTIONS<br>INVESTIGATION OF THE BASIC MOTIVATIONAL AND EMOTIONAL DYNAMICS UNDERLYING HUMAN BEHAVIOR, WITH EMPHASIS ON EXPERIMENTAL AND CONCEPTUAL APPROACHES.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                     | 3 CREDITS | PSYCH | 236 | THE PSYCHOLOGY OF WOMEN<br>PSYCHOLOGICAL THEORIES ABOUT WOMEN FROM FREUD TO THE PRESENT WILL BE EXAMINED, WITH EMPHASIS PLACED ON BIOLOGICAL AND SOCIO-CULTURAL PERSPECTIVES AS THEY HAVE INFLUENCED THE DEVELOPMENT OF A PSYCHOLOGY OF WOMEN. SPECIAL ATTENTION WILL BE PAID TO THE DEVELOPMENTAL PROCESS AND THE UNIQUE ISSUES AND CONCERNS OF THE FEMALE INFANT, CHILD, ADOLESCENT, YOUNG ADULT, AND OLDER WOMAN.<br>PREREQUISITE: PSYCHOLOGY, RECOMMENDED: PSYCH 230, 240<br>3 LECT HRS<br>MS. LIFM                                                                                                                                                               | 3 CREDITS |
| PSYCH | 212 | ADVANCED RESEARCH METHODS IN PSYCHOLOGY<br>ADVANCED ASPECTS OF RESEARCH DESIGN, METHODS OF ANALYSIS, INFERRENTIAL STATISTICS WILL BE COVERED.<br>PREREQUISITE: PSYCHOLOGY 101 AND 211<br>3 LECT HRS<br>MR. SCHWARTZ                                                                                                                                                                                                                                                                                                                                                                                         | 3 CREDITS | PSYCH | 240 | LIFE-SPAN DEVELOPMENTAL PSYCHOLOGY<br>COGNITIVE, SOCIAL AND PERSONALITY DEVELOPMENT THROUGHOUT THE ENTIRE INDIVIDUAL LIFE CYCLE.<br>3 LECT HRS<br>PREREQUISITE: PSYCHOLOGY 101<br>MS. GOLDMAN. MR. MISHARA                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3 CREDITS |
| PSYCH | 215 | PSYCHOPATHOLOGY<br>ETIOLOGY, DYNAMICS AND TREATMENT OF PSYCHOPATHOLOGY.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>MR. SLAVIN. MR. GAINES. MR. RAMSEUR                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3 CREDITS | PSYCH | 241 | INFANCY AND CHILDHOOD DEVELOPMENT<br>THIS COURSE EXPLORES HUMAN DEVELOPMENT FROM INFANCY TO ADOLESCENCE, I.E., FROM CHILDHOOD TO AGES SEVEN OR EIGHT. MAJOR EMPHASIS WILL BE PLACED ON EARLY PERCEPTUAL, COGNITIVE AND SOCIAL AFFECTIVE DEVELOPMENT HEARING THE FOLLOWING QUESTIONS IN MIND. HOW DOES THE WORLD OF SPACE AND OBJECTS APPEAR TO THE INFANT? HOW DOES HE ACQUIRE KNOWLEDGE AND DISCOVER REALITY? HOW DOES THE CHILD EXPERIENCE THE WORLD OF PEOPLE AND DEVELOP A SENSE OF SELF? HOW DOES THE CHILD DEVELOP ATTACHMENTS TO OTHERS AND WHAT ROLE DO THE SIGNIFICANT PEOPLE PLAY IN HIS LIFE?<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>MR. MISHARA | 3 CREDITS |
| PSYCH | 216 | SOCIAL PSYCHOLOGY<br>A BASIC SURVEY OF SOCIAL PSYCHOLOGY, WITH FOCUS ON THE NATURE OF HUMAN GROUPS AND THE WAY MAN'S PARTICIPATION IN THEM AFFECTS HIS OWN BEHAVIOR.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>MR. NIXON. MS. WILKIE. MS. HENNER. MR. KRIEFLAMP                                                                                                                                                                                                                                                                                                                                      | 3 CREDITS | PSYCH | 242 | ADOLESCENCE<br>THIS COURSE IS DESIGNED TO ACQUAINT STUDENTS WITH PSYCHOLOGICAL CHARACTERISTICS OF ADOLESCENT DEVELOPMENT, THEORETICAL APPROACHES TO ADOLESCENCE, AND EXPERIMENTAL STUDIES OF THE CAUSES OF A VARIETY OF BEHAVIORS DURING ADOLESCENCE. THE COURSE WILL ALSO FOCUS UPON MAJOR PROBLEMS AND CHARACTERISTICS OF ADOLESCENTS IN MODERN SOCIETY. THERE WILL BE BRIEF EXAMINATION OF HOW ADULTS MAY WORK MORE EFFECTIVELY TO FACILITATE BETTER ADOLESCENT DEVELOPMENT.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>MS. GOLDMAN. MR. GOMHOSI                                                                                                             | 3 CREDITS |
| PSYCH | 231 | LABORATORY IN SOCIAL PSYCHOLOGY<br>THE GENERAL PURPOSE OF THE COURSE WILL BE TO INTRODUCE THE STUDENT TO EXPERIMENTAL RESEARCH METHODS IN SOCIAL PSYCHOLOGY. CLASS ACTIVITIES WILL INCLUDE EXAMINATION OF THE RELEVANT LITERATURE, PARTICIPATION IN PREDESIGNED STUDIES, AND THE FORMULATION, CARRYING OUT AND ANALYSIS OF AN ORIGINAL RESEARCH PROJECT. THE STUDENT WILL HAVE AN OPPORTUNITY TO BECOME FAMILIAR WITH THE USE OF LABORATORY EQUIPMENT SUCH AS AUDIO AND VIDEO RECORDERS, EVENT RECORDERS, AND PSYCHOLOGICAL MEASUREMENT DEVICES.<br>PREREQUISITE: PSYCHOLOGY 230<br>3 LAB HRS<br>MR. HENNER | 3 CREDITS | PSYCH | 232 | COMMUNITY PSYCHOLOGY<br>CONTRIBUTIONS OF PSYCHOLOGY TO THE UNDERSTANDING OF HUMAN COMMUNITIES, CONSIDERATION OF FACTORS SUCH AS MOTIVATION, PERCEPTION, COGNITION, AND ATTITUDES AS THESE INFLUENCE COMMUNITY PARTICIPATION, CONCEPTIONS OF COMMUNITY PSYCHOLOGY.                                                                                                                                                                                                                                                                                                                                                                                                     |           |



|           |                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |                                                                                                                                                                                                                                                                                                                                         |           |                                                                                                                                                                                                                                                                                                      |           |                                                                                                                                                                                                                                                                                                                                                                                               |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |                                                                                             |           |                                                                                                                                                                                                                                                                         |           |                                                                                                                                                                                                                                                                                                 |           |                                                                                                                                                                                                                                              |           |                                                                                                             |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------------|
| PSYCH 243 | PSYCHOLOGY OF HUMAN AGING<br>A DEVELOPMENTAL APPROACH TO HUMAN INTEGRITY AND FUNCTIONING IN THE SECOND HALF OF THE LIFESPAN. STEREOTYPED IDEAS ABOUT THE AGING PROCESS ARE CRITICALLY REVIEWED. SPECIAL ATTENTION IS GIVEN TO NEWER APPROACHES TO FACILITATING PSYCHOLOGICAL WELL-BEING IN THE LATER YEARS OF LIFE.<br>PREREQUISITE: PSYCHOLOGY 101 AND JUNIOR-SENIOR STANDING<br>3 CREDITS<br>3 LECT HRS<br>MR. VISHARA, MR. KASTENHAUM | PSYCH 270 | STATISTICS<br>SCIENTIFIC METHOD AS IT APPLIES TO PSYCHOLOGY AND THE ROLE OF STATISTICS WITHIN THAT METHOD. FUNDAMENTAL STATISTICAL CONCEPTS AND TECHNIQUES. PRIMARY STRESS IS ON THE LOGIC WHICH UNDERLIES THEIR USE AS DESCRIPTIVE AND ANALYTIC TOOLS IN PSYCHOLOGICAL INQUIRY.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>STAFF | PSYCH 275 | EXPERIMENTAL PSYCHOLOGY<br>SCIENTIFIC METHODS IN GENERAL AND EXPERIMENTAL METHODS IN PARTICULAR ARE COVERED. EMPHASIS IS PLACED ON DEVELOPING THE ABILITY TO CRITICALLY EVALUATE THE EVIDENCE UPON WHICH VARIOUS ASSESSMENTS ARE MADE.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>MR. SCHWARTZ | PSYCH 280 | HISTORY OF PSYCHOLOGY<br>AN EXAMINATION OF VARIOUS VIEWS OF MAN OVER TIME AND THE TREATMENT OF BASIC PHILOSOPHICAL-PSYCHOLOGICAL QUESTIONS. THE OBJECTIVE OF THE COURSE IS FOR THE STUDENT TO GAIN A SENSE OF CHANGING EMPHASIS RELATIVE TO HUMAN ISSUES SUCH AS SOCIO-CULTURAL FACTORS, INTELLECTUAL, TECHNOLOGICAL ADVANCES, ETC.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>MR. ROSS | PSYCH 285 | PSYCHOLOGY, PSYCHIATRY AND THE LAW<br>THE COURSE WILL COVER SEVERAL ISSUES THAT JOINTLY CONCERN LAWYERS, PSYCHIATRISTS, AND PSYCHOLOGISTS WORKING IN THE MENTAL HEALTH FIELD. SUCH ISSUES INCLUDE INVOLUNTARY CIVIL COMMITMENT OF THE MENTALLY ILL, CRIMINAL RESPONSIBILITY TESTS, AND THE SPECIAL HANDLING OF DANGEROUS OFFENDERS. EACH OF THESE ISSUES RAISES SERIOUS METHODOLOGICAL AND PHILOSOPHICAL QUESTIONS FOR ALL THE PROFESSIONALS WHO PARTICIPATE IN THE DECISION MAKING PROCESS. THE ASSIGNED READINGS WILL FOCUS ON SOME OF THE SUBSTANTIVE PROBLEMS RAISED BY THESE QUESTIONS AND THE CONFLICTING METHODOLOGIES OFTEN EMPLOYED BY THE DIFFERENT PROFESSIONAL DISCIPLINES IN THEIR ATTEMPT TO RESOLVE THE INEVITABLE TENSION BETWEEN THE RIGHTS OF THE INDIVIDUAL AND THE RIGHTS OF A SOCIETY.<br>3 LECT HRS<br>STAFF | PSYCH 290 | ENVIRONMENTAL PSYCHOLOGY<br>3 LECT HRS<br>STAFF                                             | PSYCH 300 | PSYCHOLOGICAL TESTING<br>SURVEY OF PSYCHOLOGICAL TESTING, PURPOSES AND TYPES OF TESTS, AND PRINCIPLES OF TEST CONSTRUCTION.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>MR. SCHLEIFFER                                                                             | PSYCH 310 | TIME, SPACE AND FANTASY<br>FAR-RANGING EXPLORATION OF THE HUMAN IMAGINATION AS APPLIED TO THE DIMENSION OF TIME AND SPACE.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>MR. KASTENHAUM                                                                                                      | PSYCH 320 | PSYCHOANALYSIS AND THE STUDY OF MAN<br>BASIC PSYCHOANALYTIC CONCEPTS APPLIED TO THE STUDY OF MAN.<br>3 LECT HRS                                                                                                                              | PSYCH 330 | NEW APPROACHES TO SOCIAL PSYCHOLOGY<br>SEMINAR IN RECENT THEORETICAL, EMPIRICAL AND METHODOLOGICAL DEVELOP- |
| PSYCH 244 | DEATH, DYING AND LETHAL BEHAVIOR<br>EXPLORES OUR TOTAL RELATIONSHIP TO DEATH. IT DRAWS UPON MATERIAL FROM PSYCHOLOGY AND RELATED FIELDS, AND FROM PERSONAL EXPERIENCE AND FEELINGS OF THE DAY.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 CREDITS<br>MR. KASTENHAUM                                                                                                                                                                            | PSYCH 250 | LEARNING<br>AN INTRODUCTION TO CURRENT VIEWS OF LEARNING, AND ITS DEVELOPMENT. CONCEPTS, APPLICATION, THEORETICAL ISSUES AND BEHAVIORAL CHANGE.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 CREDITS<br>MR. RYANES, MR. STRICKLAND                                                                                                              | PSYCH 251 | LAW METHODS IN LEARNING<br>LAB EXPERIMENTS WITH BOTH ANIMAL AND HUMAN SUBJECTS COVERING DIVERSE LEARNING PHENOMENA.<br>PREREQUISITE: PSYCH 211 AND 250 (MAY BE TAKEN WITH 250)<br>3 CREDITS<br>1 LECT HRS, 4 LAB HRS<br>MR. RYANES                                                                   | PSYCH 245 | EDUCATIONAL PSYCHOLOGY<br>APPLICATION OF PSYCHOLOGICAL CONCEPTS TO EDUCATION WITH EMPHASIS ON THE ROLE OF THE SCHOOL, THE FAMILY, THE CLASSROOM, AND THE TEACHER IN THE EDUCATIONAL PROCESS.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 CREDITS<br>3 LECT HRS<br>STAFF                                                                                                                              | PSYCH 255 | PERCEPTION<br>THE TRADITIONAL PROBLEMS OF PERCEPTION, WITH FOCUS ON THE CHANGING THEORETICAL PERSPECTIVES WITHIN WHICH THESE PROBLEMS ARE VIEWED. EVOLUTION IN THEORY FROM EARLY ELEMENTALISTIC APPROACHES TO THE MORE CURRENT CONCERN WITH THE PERCEPTION-PERSONALITY RELATIONSHIPS.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 CREDITS<br>3 LECT HRS<br>MR. KRUS, MR. RYANES                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PSYCH 256 | LABORATORY IN PERCEPTION<br>PREREQUISITE: PSYCHOLOGY 255<br>3 CREDITS<br>3 LAB HRS<br>STAFF | PSYCH 260 | PHYSIOLOGICAL PSYCHOLOGY<br>A BASIC SURVEY OF PHYSIOLOGICAL PSYCHOLOGY INCLUDING SENSORY PROCESSES, MOTOR BEHAVIOR, DRIVES AND INSTINCTS, AROUSAL AND LEARNING.<br>PREREQUISITE: PSYCHOLOGY 101 AND PERMISSION OF INSTRUCTOR.<br>3 CREDITS<br>3 LECT HRS<br>MR. SAMUELS | PSYCH 265 | COMPARATIVE PSYCHOLOGY<br>EVOLUTION OF BEHAVIOR, SIMILARITIES AND DIFFERENCES FOR ENVIRONMENTAL ADJUSTMENT AND FOR BEHAVIORAL ORGANIZATION AMONG VARIOUS TYPES OF LIVING ORGANISMS FROM PLANTS TO UNICELLULAR ORGANISMS TO THE PRIMATES, INCLUDING MAN.<br>3 CREDITS<br>3 LECT HRS<br>MR. MOORE | PSYCH 266 | LABORATORY IN ANIMAL BEHAVIOR<br>THE LAB WILL INTRODUCE PRACTICAL ASPECTS OF THE STUDY OF SPECIES-TYPICAL BEHAVIOR. BOTH OBSERVATIONAL AND EXPERIMENTAL TECHNIQUES WILL BE USED WITH A VARIETY OF BEHAVIOR PATTERNS IN A VARIETY OF SPECIES. |           |                                                                                                             |

- MENTS IN SOCIAL PSYCHOLOGY.  
PREREQUISITE: PSYCHOLOGY 101 AND 230  
3 LECT HRS  
MR. MIXON, MS. WILKIE  
3 CREDITS
- PSYCH 331 NATURE OF PREJUDICE  
EXAMINATION OF PSYCHOLOGICAL AND SOCIO-CULTURAL FACTORS IN INTER-GROUP PREJUDICE. WILL USE THE CLASSIC WORK BY GORDON ALLPORT AS AN ANALYTIC FRAMEWORK AND INCORPORATE SUBSEQUENT DEVELOPMENTS IN THE SOCIAL SCIENCES.  
PREREQUISITE: PSYCHOLOGY 101  
3 LECT HRS  
STAFF  
3 CREDITS
- PSYCH 332 EDUCATIONAL SEGREGATION AND DESEGREGATION  
EXAMINATION OF SOCIAL AND PSYCHOLOGICAL ASPECTS OF SEGREGATION, ITS EFFECTS ON THE ACHIEVEMENT, SELF-CONCEPT AND INTERPERSONAL ATTITUDES OF STUDENTS, AND THE SCHOOL CONDITIONS NECESSARY FOR THEIR MAXIMUM BENEFIT.  
PREREQUISITE: PSYCHOLOGY 101  
3 LECT HRS  
STAFF  
3 CREDITS
- PSYCH 333 GROUP DYNAMICS  
AN EXAMINATION OF SMALL GROUP BEHAVIOR FROM A THEORETICAL AND EMPIRICAL PERSPECTIVE. THE GROUP IS VIEWED AS A SYSTEM FUNCTIONING IN A NUMBER OF ENVIRONMENTS - PHYSICAL, PERSONAL, SOCIAL, AND TASK. EACH OF THESE INTERRELATED ENVIRONMENTS INFLUENCE VARIOUS ASPECTS OF GROUP PROCESS, THUS LEADERSHIP, POWER, COHESIVITY, STATUS, GOALS, ETC., ARE CONSIDERED AS INTERRELATED PROCESSES OF SOCIAL INTERACTION.  
PREREQUISITE: PSYCHOLOGY 101 AND 230  
3 LECT HRS  
MS. WILKIE, MR. MIXON  
3 CREDITS
- PSYCH 335 COGNITIVE PSYCHOLOGY  
AN EXPLORATION OF HOW MAN DEVELOPS STRATEGIES FOR OBTAINING INFORMATION FROM HIS ENVIRONMENT, AND HOW THIS INFORMATION IS ORGANIZED, STORED, AND RETRIEVED FOR LATER USE.  
PREREQUISITE: PSYCHOLOGY 101  
3 LECT HRS  
STAFF  
3 CREDITS
- PSYCH 340 REPRESENTATIONAL DEVELOPMENTAL PSYCHOLOGY  
PREREQUISITE: PSYCHOLOGY 240 OR 241  
3 LECT HRS  
MS. GORDON  
3 CREDITS
- PSYCH 341 THE FAMILY AND THE CHILD-A PSYCHOLOGICAL VIEW  
THE ROLE OF THE FAMILY IN PSYCHOLOGICAL DEVELOPMENT OF THE CHILD. A PSYCHOANALYTIC VIEW OF THE FAMILY. TO EXAMINE STAGES OF DEVELOPMENT FROM THE THIRD INFANT OF PREGNANCY TO SIXTEEN YEARS OF AGE.  
PREREQUISITE: PSYCHOLOGY 101  
3 LECT HRS  
MR. SCHULTZ  
3 CREDITS
- PSYCH 342 DEVELOPMENTAL SOCIAL PSYCHOLOGY  
DEVELOPMENT IN CHILDREN AND ADULTS OF ASPECTS OF SUCH PROCESSES AS COMPETITION, COMPETITION, AND GROUP PROBLEM SOLVING, GROUP CONFLICT, SOCIAL PERCEPTION, AND WOLF-PACK BEHAVIOR.  
PREREQUISITE: PSYCHOLOGY 240, 240  
3 LECT HRS  
MS. GUTTENBERG  
3 CREDITS
- PSYCH 343 FIELD STUDY IN ADULTS  
INTEGRATES THEORIES AND EMPIRICAL FINDINGS IN AGING WITH PRACTICAL FIELD EXPERIENCE. STUDENTS SPEND 4 HOURS PER WEEK IN FIELD PLACEMENT WITH THE FOLLOWING 240 CLASS MATING. STUDENTS ARE REQUIRED TO DISCUSS OF FIELD EXPERIENCES AND ASSIGNED READINGS ON THEORY AND RESEARCH.  
PREREQUISITE: PSYCHOLOGY 240 OR 340  
3 LECT HRS  
MR. MISHARA  
3 CREDITS
- PSYCH 351 LAB IN COGNITIVE PSYCHOLOGY  
EXPERIMENT ON A VARIETY OF HIGHER PROCESSES INVOLVING HUMAN SUBJECTS.  
PREREQUISITE: PSYCHOLOGY 350  
3 LAB HRS  
STAFF  
3 CREDITS
- PSYCH 355 SENSORY PROCESSES AND PATTERN RECOGNITION  
THIS COURSE WILL EXPLORE THE MEANS BY WHICH A PERCEIVED, REMEMBERED AND THOUGHT ABOUT WORLD COMES INTO BEING FROM CHANGES IN THE ENERGY DISTRIBUTION ON THE RETINA AND FLUCTUATING PRESSURE PATTERNS AT THE EAR; HOW THESE BECOME THE IMAGES THAT WE SEE AND THE SOUNDS, SPEECH AND MUSIC THAT WE HEAR.  
3 LECT HRS  
STAFF  
3 CREDITS
- PSYCH 360 NEUROPSYCHOLOGY I  
EMOTION, MEMORY AND LANGUAGE, INCLUDING A CONSIDERATION OF HUMAN BRAIN DAMAGE AND PSYCHOLOGICAL TESTS USED TO ASSESS SUCH DAMAGE.  
PREREQUISITE: PSYCHOLOGY 260  
3 LECT HRS  
MR. BUTTERS, MS. MC INTYRE  
3 CREDITS
- PSYCH 361 NEUROPSYCHOLOGY II  
NEURO-BASIS OF HIGHER COGNITIVE FUNCTIONS SUCH AS PERCEPTION, REASONING, MEMORY AND LANGUAGE, INCLUDING A CONSIDERATION OF HUMAN BRAIN DAMAGE AND PSYCHOLOGICAL TESTS USED TO ASSESS SUCH DAMAGE.  
PREREQUISITE: PSYCHOLOGY 260  
MR. BUTTERS, MS. MC INTYRE  
3 CREDITS
- PSYCH 395 FIELD STUDY OPTION  
THIS OPTION IS A 61 CREDIT ADDITION TO STUDENT COURSE WORK IN THE FOLLOWING COURSES--PERSONALITY, CASE PSYCHOLOGY, PSYCHOPATHOLOGY, THE PSYCHOLOGY OF WOMEN, COMMUNITY PSYCHOLOGY, AND DEVELOPMENTAL, SOCIAL, EDUCATIONAL, AND COMMUNITY PSYCHOLOGY. STUDENTS SPEND 02 TO 03 HOURS PER WEEK PARTICIPATING IN COURSE-RELATED FIELD SETTINGS. THROUGH SUPERVISION AND JOURNAL REPORTS STUDENTS USE PSYCHOLOGICAL THEORIES AND METHODS TO ANALYZE DATA GATHERED IN THE FIELD SETTING.  
PREREQUISITE: PSYCHOLOGY 101 AND PERMISSION OF INSTRUCTOR  
HRS BY ARRANGEMENT  
STAFF  
1 CREDITS
- PSYCH 415 NORMALITY AND PSYCHOPATHOLOGY IN CHILDHOOD  
AN ADVANCED COURSE IN DEVELOPMENTAL PSYCHOLOGY AND PSYCHOPATHOLOGY. DEALS MAINLY WITH EARLY CHILDHOOD AND EMPHASIZES AN ANALYSIS OF CHILDREN'S VIEWS AS THEY EVOLVE FROM EXPERIENCE IN THE PSYCHOLOGICAL, SPECIFIC TOPICS INCLUDE TEMPORARY INFLECTIONS IN CHILDHOOD, THE TRANSITIONAL OBJECT, CONSCIOUSNESS IN CHILDHOOD, THE INFLUENCE OF PHYSICAL ILLNESS AND HOSPITALIZATION ON MENTAL DEVELOPMENT, OBJECT LOSS, THE DIAGNOSTIC PROFILE, AND THE CONCEPT OF THE REPRESENTATIONAL WORLD.  
PREREQUISITE: PSYCHOLOGY 101, 200, 215 AND 241  
3 LECT HRS  
MR. ROSENBLATT  
3 CREDITS
- PSYCH 425 FIELD CASE HISTORIES  
WOLF-PACK, SCHEFFER, LITTLE HANS. SPECIAL ATTENTION TO THE PROBLEMS OF THE CASE HISTORY AS SCIENTIFIC EVIDENCE.  
PREREQUISITE: PSYCHOLOGY 101, 200, 215, 241 AND 320  
3 LECT HRS  
MR. ROSENBLATT  
3 CREDITS
- PSYCH 440 METHODS AND THEORY IN DEVELOPMENTAL PSYCHOLOGY  
PREREQUISITE: PSYCHOLOGY 101  
3 LECT HRS  
STAFF  
3 CREDITS
- PSYCH 442 FIELD COURSE IN EARLY CHILD DEVELOPMENT

|       |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |
|-------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| PSYCH | 445 | ADVANCE SEMINAR IN PSYCHOLOGY<br>SEMINAR TOPICS VARY BY SEMESTER.<br>PREREQUISITE: SENIOR STANDING AND PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3 CREDITS   |
| PSYCH | 446 | ADVANCED SEMINAR IN DEVELOPMENTAL PSYCHOLOGY<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3 CREDITS   |
| PSYCH | 447 | PSYCHOLOGY OF DEVELOPMENT<br>PROBLEMS IN BEHAVIORAL DEVELOPMENT WILL BE EXPLORED FROM AN EVOLUTIONARY PERSPECTIVE. A MAJOR EMPHASIS OF THE COURSE WILL BE THE FORMULATION OF GENERAL PRINCIPLES OF DEVELOPMENT APPLICABLE TO A WIDE VARIETY OF SPECIES. A SECOND EMPHASIS WILL BE PLACED ON INTERPRETING THE RELATION OF THE ANIMAL LITERATURE TO AN UNDERSTANDING OF HUMAN DEVELOPMENT. SPECIFIC TOPICS WILL BE DRAWN FROM NATURALISTIC STUDIES OF ANIMAL AND HUMAN DEVELOPMENT AND FROM STUDIES EXPLORING THE RELATION BETWEEN BIOLOGY AND BEHAVIORAL DEVELOPMENT.<br>PREREQUISITE: PSYCHOLOGY 101 AND 240 OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MS. MOORE | 3 CREDITS   |
| PSYCH | 448 | SYSTEMS OF PSYCHOLOGY<br>A STUDY OF MAJOR TRENDS IN CONTEMPORARY PSYCHOLOGY, WITH PARTICULAR EMPHASIS ON BEHAVIORISTIC AND PHENOMENOLOGICAL VIEWPOINTS. AN EXAMINATION OF THE LEADING MOVEMENTS IS BASED ON HISTORICAL EVALUATION OF MAJOR CONCEPTS.<br>PREREQUISITE: PSYCHOLOGY 101 AND SENIOR STANDING OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>MS. ROSS                                                                                                                                                                                                                                                                                                      | 3 CREDITS   |
| PSYCH | 449 | HUMANISTIC PSYCHOLOGY<br>AN EXAMINATION OF THE WRITINGS AND IDEAS OF THOSE PSYCHOLOGISTS WHO ARE PART OF THE '3RD FORCE' MOVEMENT IN PSYCHOLOGY. THE FOCUS WILL BE ON AMERICAN PSYCHOLOGISTS, BUT THERE WILL BE SOME ATTENTION PAID TO THE ROOTS OF THE AMERICAN HUMANISTIC PSYCHOLOGY MOVEMENT IN EUROPEAN EXISTENTIALISM. PSYCHOLOGISTS SUCH AS CARL ROGERS, ABRAHAM MASLOW, FRITZ PERLS, AND VICTOR FRANKL WILL BE CONSIDERED.<br>PREREQUISITE: PSYCHOLOGY 101 AND EITHER 200 OR 240<br>3 LECT HRS<br>STAFF                                                                                                                                                      | 3 CREDITS   |
| PSYCH | 450 | PROBLEMS IN PSYCHOLOGY I<br>INDEPENDENT WORK ON SPECIAL PROBLEMS OR IN CERTAIN FIELDS OF PSYCHOLOGICAL INTEREST. STUDENTS MUST ARRANGE WITH AN INDIVIDUAL INSTRUCTOR AND HAVE PROJECT APPROVED BY THE DEPARTMENT.<br>PREREQUISITE: PSYCHOLOGY 101<br>HRS BY ARRANGEMENT<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                    | 1-4 CREDITS |
| PSYCH | 451 | PROBLEMS IN PSYCHOLOGY II<br>INDEPENDENT WORK ON SPECIAL PROBLEMS OR IN CERTAIN FIELDS OF PSYCHOLOGICAL INTEREST. STUDENTS MUST ARRANGE WITH AN INDIVIDUAL INSTRUCTOR AND HAVE PROJECT APPROVED BY THE DEPARTMENT.<br>PREREQUISITE: PSYCHOLOGY 101<br>HRS BY ARRANGEMENT<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                   | 1-4 CREDITS |
| PSYCH | 452 | SPECIAL TOPICS IN PSYCHOLOGY<br>CONDUCTED BY VARIOUS MEMBERS OF THE FACULTY WITH SPECIAL ATTENTION IN THEIR FIELDS OF SCHOLARLY INTEREST. TOPICS VARY BY SEMESTER.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3 CREDITS   |
| PSYCH | 453 | ISSUES FOR PSYCHOLOGY<br>GUEST LECTURERS WILL DISCUSS NEW DEVELOPMENTS INTERESTING TO PSYCHOLOGY AS A SCIENCE OR RELEVANT TO PROBLEMS FOR PSYCHOLOGICAL ANALYSIS. CLOSED DISCUSSIONS GUIDED BY RESPONSIBLE FACULTY WILL FOLLOW LECTURE SESSIONS OPEN TO THE UNIVERSITY COMMUNITY.<br>PREREQUISITE: PSYCHOLOGY 101<br>3 LECT HRS<br>MR. KRAMER                                                                                                                                                                                                                                                                                                                       | 3 CREDITS   |
| PSYCH | 454 | ADVANCE SEMINAR IN PSYCHOLOGY<br>SEMINAR TOPICS VARY BY SEMESTER.<br>PREREQUISITE: SENIOR STANDING AND PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3 CREDITS   |
| PSYCH | 455 | SENIOR HONORS SEMINAR I<br>AN INTENSIVE PROGRAM OF DIRECTED RESEARCH COMBINED WITH WEEKLY PREREQUISITE: PSYCHOLOGY 101, 211, 212, A 3.0 GRADE POINT AVERAGE AND CONSENT OF PSYCHOLOGY HONORS COMMITTEE<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3 CREDITS   |
| PSYCH | 456 | SENIOR HONORS SEMINAR II<br>AN INTENSIVE PROGRAM OF DIRECTED RESEARCH COMBINED WITH WEEKLY PREREQUISITE: PSYCHOLOGY 498<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3 CREDITS   |
| PSYCH | 457 | RELIGIOUS STUDIES<br>RELSTO 109<br>INTRODUCTION TO RELIGION-SYMBOL, MYTH AND RITUAL<br>A COMPARATIVE INTRODUCTORY AND SURVEY COURSE ON FUNDAMENTAL SUBJECT MATTER AND METHODS OF APPROACH, FOCUSING ON THE CENTRAL IMPORTANCE OF SYMBOLS, MYTHS AND RITUALS. CONCENTRATION ON SUCH TOPICS AS: MYTHOPOEIC RELIGION, MYTH AND HISTORY, HEROES AND SAVIORS, MYSTICAL TRANSFORMATION, PROPHETIC VISION, AND CONTEMPORARY SPIRITUAL TRANSCENDENCE.<br>3 LECT HRS<br>MR. HOPKINS                                                                                                                                                                                          | 4 CREDITS   |
| PSYCH | 458 | RELSTO 122<br>AN INTRODUCTORY TO RELIGION: VARIETIES OF RELIGIOUS EXPERIENCE<br>AN INTRODUCTORY AND SURVEY COURSE IN THE STUDY OF RELIGION, CONCENTRATING ON CERTAIN FIGURES AND MOVEMENTS FROM THE MAJOR WORLD RELIGIOUS TRADITIONS, AND USING PSYCHOLOGICAL, SOCIOLOGICAL AND THEOLOGICAL-PHILOSOPHICAL APPROACHES. READINGS SUCH AS THE GILGAMESH EPIC, AUGUSTINE'S CONFESSIONS, GANDHI'S AUTOBIOGRAPHY, HASIDIC STORIES, ZEN KOANS, SUFI TALES, AS WELL AS CONTEMPORARY WRITINGS.<br>3 LECT HRS<br>STAFF                                                                                                                                                        | 4 CREDITS   |
| PSYCH | 459 | RELSTO 231<br>RELIGIONS OF INDIA<br>A STUDY OF INDIAN HINDU, BUDDHIST AND OTHER RELIGIOUS FORMS AS EXPRESSED IN MYTH, LITERATURE, ART, AND SOCIAL MOVEMENTS. EQUAL ATTENTION TO TRADITIONAL MATERIAL SUCH AS THE UPANISHADS, THE BHAGVAD GITA, AND BUDDHA, AND TO RECENT FIGURES AND MOVEMENTS SUCH AS GANDHI.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                               | 3 CREDITS   |
| PSYCH | 460 | RELSTO 232<br>RELIGIONS OF THE FAR EAST<br>A STUDY OF RELIGIOUS EXPRESSION IN CHINA AND JAPAN WITH SPECIAL EMPHASIS ON CONFUCIANISM, TAOISM, BUDDHISM AND SHINTO.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3 CREDITS   |
| PSYCH | 461 | RELSTO 241<br>OLD TESTAMENT, THE RELIGION OF ISRAEL AND THE ANCIENT NEAR EAST<br>INTERPRETATION OF THE RELIGION AND LITERATURE OF ANCIENT ISRAEL IN COMPARISON WITH THE MYTHIC RELIGIOUS FORMS OF THE ANCIENT NEAR EAST                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3 CREDITS   |



RELSTO 247 WITH SOME ATTENTION TO SUBSEQUENT BIBLICAL INTERPRETATION, LITERATURE AND PHILOSOPHY. CENTRAL THEMES INCLUDE MYTH AND HISTORY, COVENANT, CHARISMATIC LEADERSHIP, IMPERIAL RELIGION, PROPHETIC PROTEST AND APOCALYPTIC VISIONS. 3 CREDITS  
MR. HORSLEY

RELSTO 242 NEW TESTAMENT, JUDAISM AND HELLENISTIC RELIGION  
A STUDY OF RELIGION AND LITERATURE OF EARLY CHRISTIANITY IN COMPARISON WITH OTHER CONTEMPORARY JEWISH MOVEMENTS--PHARISEES, ESSEES, ETC.--AND WITH HELLENISTIC PHILOSOPHY AND MYSTERY RELIGIONS. CONCENTRATION ON THE CAREER AND TEACHINGS OF JESUS OF NAZARETH, THE INTERPRETATION OF HIS SIGNIFICANCE, AND THE DEVELOPMENT AND DIVERSITY OF THE CHRISTIAN MOVEMENT. SOME ATTENTION TO MODERN LITERARY, MUSICAL AND CINEMATIC INTERPRETATIONS. 3 CREDITS  
MR. HORSLEY

RELSTO 250 VARIETIES OF MYSTICISM  
A CRITICAL AND COMPARATIVE STUDY OF SPECIFIC MYSTICS AND MYSTICAL MOVEMENTS FROM THE HINDU, MUSLIM, JEWISH AND CHRISTIAN RELIGIOUS TRADITIONS. 3 CREDITS  
STAFF

RELSTO 252 SACRED STORIES AND MYTH  
A STUDY OF THE SACRED STORIES OF 'GREAT MEN' IN THE RELIGIONS OF THE WORLD, FOCUSING ON THE WAYS IN WHICH 'HISTORICAL' MEN AND EVENTS TAKE ON A MYTHOLOGICAL CHARACTER. THE COURSE WILL CONCENTRATE ON READINGS FROM THE ASIAN HIGH RELIGIONS, SUCH AS HINDU TALES OF KINGS, STORIES OF THE BUDDHA, AND LEGENDS OF CHINESE EMPERORS, WITH SOME ATTENTION TO TRIBAL TALES OF WEST AFRICA AND THE HEBREWS. 3 CREDITS  
WAGHORN

RELSTO 245 RELIGIONS OF THE OPPRESSED  
AN EXAMINATION OF THE RELIGIOUS LIFE AND EXPRESSIONS OF SUBJECT PEOPLES, INCLUDING THE WREATHS THESE HAVE TO THE PROGRAMS AND IDEOLOGIES OF THE OPPRESSORS. CONCENTRATION ON 4 OR 5 HISTORICAL AND CONTEMPORARY MOVEMENTS SUCH AS ANCIENT JEWISH APOCALYPTIC MOVEMENTS, INCLUDING JESUS OF NAZARETH, REVIVAL EUROPEAN MILLENNARIAN GROUPS, THE GHOST DANCE AMONG THE AMERICAN INDIANS, CERTAIN AFRICAN LITERATURE MOVEMENTS, BLACK RELIGION IN AMERICA AND THE WOMEN'S LITERATURE MOVEMENT 3 CREDITS  
MR. HORSLEY

RELSTO 264 CONTEMPORARY RELIGIOUS THOUGHT  
CONSIDERATION OF MAJOR CURRENTS IN CONTEMPORARY RELIGIOUS THOUGHT FROM EXISTENTIALIST THEOLOGY AND MYSTICAL CONTEMPLATION TO MORE SOCIALLY ORIENTED REFLECTION AND RELIGIOUS PHILOSOPHIES OF NON-VIOLENCE AND REVOLUTION. READINGS FROM HURER, TILLICH, WEIL, TEILHARD, WERTON, NIERUHR, GANDHI, FACKENHEIM, HERRIGAN, COX, AND DALY. 3 CREDITS  
MR. HORSLEY

RELSTO 273 PROBLEMS IN RELIGION AND ETHICS  
CONSIDERATION OF CERTAIN RELIGIOUS-ETHICAL PERSPECTIVES ON A FEW KEY SOCIAL ISSUES SUCH AS MEDICAL ETHICS, RACIAL AND SEXUAL OPPRESSION, POVERTY, AND VIOLENCE. CONCENTRATION ON 3 OR 4 DIFFERENT POSITIONS SUCH AS THOSE OF COX, DALY, MESSECH, KING, NIERUHR, VATICAN II AND THIRD-WORLD CATHOLIC FIGURES. 3 CREDITS  
STAFF

RELSTO 274 RELIGION AND TECHNOLOGY  
AN ASSESSMENT OF TECHNOLOGY, INCLUDING ISSUES SUCH AS ECOLOGY, ALIENATION, MEDICINE, AND WARFARE, FROM THE PERSPECTIVE OF MAJOR RELIGIOUS TRADITIONS. A CONSIDERATION OF RELIGIOUS-ETHICAL RESOURCES FOR DEALING WITH TECHNOLOGY AND ITS IMPACT ON MAN AND NATURE. SPECIAL ATTENTION MAY BE GIVEN TO ONE OR TWO PARADOXICAL PROBLEMS, FOR EXAMPLE, IN GENETICS OR MEDICAL ETHICS. 3 CREDITS  
STAFF

RELSTO 478 INDEPENDENT STUDY  
OPEN ONLY TO A VERY LIMITED NUMBER OF STUDENTS IN ANY ONE SEMESTER. A WRITTEN PROSPECTUS MUST BE FORMULATED WITH THE INSTRUCTOR. PREREQUISITE: PERMISSION OF INSTRUCTOR AND PROGRAM CHAIRMAN. 3 CREDITS  
STAFF

RELSTO 480 SPECIAL TOPICS SEMINAR  
INTENSIVE STUDY OF SPECIAL TOPICS, VARYING EACH YEAR. ENROLLMENT WILL BE LIMITED. PREREQUISITE: JUNIOR STANDING AND PERMISSION OF INSTRUCTOR. 3 CREDITS  
STAFF

## RUSSIAN

### GRADUATION REQUIREMENTS

Seven courses in the department beyond the intermediate level, which must include Russian 309-310 (Third Year Russian), Russian 261-262, (Russian Literature in Translation), two semesters of Russian Literature in the original, either Russian 305 (Phonetics) or Russian 306 (Structure of Modern Russian), Russian 263 (Russian Culture & Civilization) and Russian 311-312 (Syllabology--Fourth Year Russian).

RUSS 101 ELEMENTARY RUSSIAN  
102 FOR STUDENTS WITH NO PREVIOUS TRAINING IN RUSSIAN. DEVELOPMENT OF THE FOUR LANGUAGE SKILLS, BASED ON AN AUDIO-LINGUAL APPROACH. 4 CREDITS  
STAFF

RUSS 201 INTERMEDIATE RUSSIAN  
202 INTENSIVE REVIEW OF GRAMMAR. CONTINUED PRACTICE IN SPEAKING, WRITING AND LISTENING. 4 CREDITS  
STAFF

RUSS 203 RUSSIAN CONVERSATION AND COMPOSITION  
204 INTENSIVE PRACTICE IN RUSSIAN CONVERSATION AND COMPOSITION. PREREQUISITE: RUSSIAN 102 2-3 CREDITS  
MS. MOISEY

RUSS 240 DOSTOEVSKY  
HISTORICAL AND LITERARY BACKGROUND. NO READING KNOWLEDGE OF RUSSIAN REQUIRED. RUSSIAN MAJORS EXPECTED TO DO A PART OF THE READING IN THE ORIGINAL. PREREQUISITE: SOPHOMORE STANDING. 4 CREDITS  
MR. SIEGEL

RUSS 251 TOLSTOY  
HISTORICAL AND LITERARY BACKGROUND. NO READING KNOWLEDGE OF RUSSIAN REQUIRED. RUSSIAN MAJORS EXPECTED TO DO A PART OF THE READING IN THE ORIGINAL. 4 CREDITS  
MR. SIEGEL

RUSS 261 RUSSIAN LITERATURE IN TRANSLATION  
MODERN RUSSIAN LITERATURE, CONCENTRATING ON PROSE FROM 1800 TO THE PRESENT. NO READING KNOWLEDGE OF RUSSIAN REQUIRED. 3 HOURS. 4 CREDITS  
PREREQUISITE: SOPHOMORE STANDING. 4 CREDITS  
MR. SIEGEL, MS. HURGIN

|      |     |                                                                                                                                                                                                                                                                                                                                            |             |
|------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| RUSS | 262 | RUSSIAN LITERATURE IN TRANSLATION<br>MODERN RUSSIAN LITERATURE. CONCENTRATING ON PROSE FROM 1800 TO THE PRESENT. NO READING KNOWLEDGE OF RUSSIAN REQUIRED. 3 HOURS. 4 CREDITS<br>PREREQUISITE: SOPHOMORE STANDING.<br>3 LECT HRS<br>MR. SIEGEL, MS. RUPGIN                                                                                 | 4 CREDITS   |
| RUSS | 263 | RUSSIAN CULTURE AND CIVILIZATION<br>ASPECTS OF RUSSIAN HISTORY, RELIGION, LITERATURE, ART, ARCHITECTURE, AND MUSIC STUDIED IN RELATION TO ONE ANOTHER RATHER THAN IN ISOLATION. WITHIN THE GENERAL FRAMEWORK, STUDENTS ARE ENCOURAGED TO PURSUE TOPICS OF INDIVIDUAL INTEREST.<br>PREREQUISITE: SOPHOMORE STANDING.<br>3 LECT HRS<br>STAFF | 4 CREDITS   |
| RUSS | 264 | BULGAKOV, PASTERNAK AND SOLZHENITSYN<br>READINGS IN ENGLISH TRANSLATION OF SELECTED NOVELS AND SHORT STORIES OF THREE MAJOR SOVIET WRITERS.<br>PREREQUISITE: SOPHOMORE STANDING.<br>3 LECT HRS<br>MS. RUPGIN                                                                                                                               | 4 CREDITS   |
| RUSS | 265 | CHEKHOV<br>READINGS OF SELECTED PLAYS AND SHORT STORIES OF CHEKHOV IN ENGLISH TRANSLATION.<br>3 LECT HRS<br>MR. SIEGEL                                                                                                                                                                                                                     | 4 CREDITS   |
| RUSS | 267 | SOVIET LITERATURE<br>BEGINNINGS AND DEVELOPMENT OF SOVIET PROSE, DRAMA AND CRITICISM FROM FROM GORKY TO THE PRESENT. NO READING KNOWLEDGE OF RUSSIAN REQUIRED. MAJORS REQUIRED TO DO RESEARCH IN RUSSIAN.<br>3 LECT HRS<br>MS. RUPGIN                                                                                                      | 4 CREDITS   |
| RUSS | 268 | RUSSIAN DRAMA<br>THE MASTERPIECES OF THE RUSSIAN THEATRE FROM THE BEGINNINGS TO RECENT YEARS. PLAYS FROM FOMKIN TO GORKY. NO READING KNOWLEDGE OF RUSSIAN REQUIRED. MAJORS EXPECTED TO DO A PART OF THE READING IN THE ORIGINAL<br>PREREQUISITE: SOPHOMORE STANDING.<br>3 LECT HRS<br>MR. KOSTICH                                          | 4 CREDITS   |
| RUSS | 301 | SELECTED READINGS IN RUSSIAN LITERATURE<br>READING OF SELECTED CLASSICS OF 19TH AND 20TH CENTURY RUSSIAN LITERATURE, COMBINED WITH WRITTEN AND ORAL WORK.<br>PREREQUISITE: RUSSIAN 201 OR EQUIVALENT<br>3 LECT HRS<br>MR. KOSTICH                                                                                                          | 3 CREDITS   |
| RUSS | 302 | SELECTED READINGS IN RUSSIAN LITERATURE<br>READING OF SELECTED CLASSICS OF 19TH AND 20TH CENTURY RUSSIAN LITERATURE, COMBINED WITH WRITTEN AND ORAL WORK.<br>PREREQUISITE: RUSSIAN 201 OR EQUIVALENT<br>3 LECT HRS<br>MR. KOSTICH                                                                                                          | 3 CREDITS   |
| RUSS | 303 | RUSSIAN CONVERSATION AND COMPOSITION<br>INTENSIVE PRACTICE IN RUSSIAN CONVERSATION AND COMPOSITION.<br>PREREQUISITE: RUSSIAN 202<br>2-3 LECT HRS<br>STAFF                                                                                                                                                                                  | 2-3 CREDITS |
| RUSS | 304 | RUSSIAN CONVERSATION AND COMPOSITION<br>CONTINUATION OF RUSSIAN 303. INTENSIVE PRACTICE IN RUSSIAN CONVERSATION AND COMPOSITION.<br>PREREQUISITE: RUSSIAN 303<br>2-3 LECT HRS<br>STAFF                                                                                                                                                     | 2-3 CREDITS |
| RUSS | 305 | THE SOUND PATTERNS OF RUSSIAN<br>DETAILED ANALYSIS OF THE SOUND SYSTEM, ARTICULATION AND INTONATIONAL PATTERNS OF THE RUSSIAN LANGUAGE. EMPHASIS ON AURAL COMPREHENSION AND ORAL FLUENCY.<br>PREREQUISITE: RUSSIAN 201 OR EQUIVALENT<br>3 LECT HRS<br>STAFF                                                                                | 3 CREDITS   |
| RUSS | 306 | STRUCTURE OF THE RUSSIAN LANGUAGE<br>THE STRUCTURE OF THE CONTEMPORARY RUSSIAN LANGUAGE. MORPHOLOGY, AC-CENTUATION AND SYNTAX.<br>PREREQUISITE: RUSSIAN 201 OR EQUIVALENT<br>3 LECT HRS<br>MS. NEWMAN                                                                                                                                      | 3 CREDITS   |
| RUSS | 309 | THIRD YEAR RUSSIAN<br>READING, PROBLEMS IN GRAMMAR, COMPOSITION AND CONVERSATION<br>PREREQUISITE: INTERMEDIATE RUSSIAN OR EQUIVALENT<br>3 LECT HRS<br>MS. NEWMAN                                                                                                                                                                           | 3 CREDITS   |
| RUSS | 310 | THIRD YEAR RUSSIAN<br>A CONTINUATION OF RUSSIAN 309. READING, PROBLEMS IN GRAMMAR, COMPO-SITION AND CONVERSATION.<br>PREREQUISITE: INTERMEDIATE RUSSIAN OR EQUIVALENT<br>3 LECT HRS<br>MS. NEWMAN                                                                                                                                          | 3 CREDITS   |
| RUSS | 311 | RUSSIAN STYLISTICS<br>THE STYLE OF RUSSIAN LITERARY WORKS. PRACTICAL APPLICATION OF PRINCIPLES OF GRAMMAR AND INTENSIVE STUDY OF IDIOMATIC EXPRESSIONS.<br>PREREQUISITE: RUSSIAN 201 OR EQUIVALENT<br>3 LECT HRS<br>MR. KOSTICH                                                                                                            | 3 CREDITS   |
| RUSS | 312 | RUSSIAN STYLISTICS<br>A CONTINUATION OF RUSSIAN 311. THE STYLE OF RUSSIAN LITERARY WORKS. PRACTICAL APPLICATION OF PRINCIPLES OF GRAMMAR AND INTENSIVE STUDY OF IDIOMATIC EXPRESSIONS.<br>PREREQUISITE: RUSSIAN 201 OR EQUIVALENT<br>3 LECT HRS<br>MR. KOSTICH                                                                             | 3 CREDITS   |
| RUSS | 321 | SPECIALIZED READING<br>TEXTS IN VARIOUS FIELDS READ INTENSIVELY AND EXTENSIVELY-PRIMARILY FOR VOCABULARY ACQUISITION.<br>PREREQUISITE: RUSSIAN 201 OR EQUIVALENT<br>3 LECT HRS<br>MS. NEWMAN                                                                                                                                               | 3 CREDITS   |
| RUSS | 341 | 19TH CENTURY RUSSIAN POETRY<br>READINGS IN LERMONTOV, TJUTCHEV AND NEKRASOV.<br>PREREQUISITE: RUSSIAN 201 (OR 2 YEARS OF RUSSIAN)<br>3 LECT HRS                                                                                                                                                                                            | 3 CREDITS   |
| RUSS | 344 | PUSHKIN<br>READINGS IN THE POETRY AND PROSE OF PUSHKIN.<br>PREREQUISITE: RUSSIAN 201 (OR 2 YEARS OF RUSSIAN)<br>3 LECT HRS<br>MR. KOSTICH                                                                                                                                                                                                  | 3 CREDITS   |
| RUSS | 359 | 20TH CENTURY RUSSIAN POETRY<br>CLOSE READING AND ANALYSIS OF THE RUSSIAN TEXTS OF POEMS OF MAYAKOVSKY, VOZNESENSKY AND EVTUSHENKO.<br>PREREQUISITE: SOPHOMORE STANDING<br>3 LECT HRS<br>MR. MANSON                                                                                                                                         | 3 CREDITS   |
| RUSS | 403 | RUSSIAN CONVERSATION AND COMPOSITION<br>INTENSIVE PRACTICE IN RUSSIAN CONVERSATION AND COMPOSITION.<br>PREREQUISITE: RUSSIAN 310<br>2-3 LECT HRS<br>STAFF                                                                                                                                                                                  | 2-3 CREDITS |

- RUSS 404 RUSSIAN CONVERSATION AND COMPOSITION.  
CONTINUATION OF RUSSIAN 403. INTENSIVE PRACTICE IN RUSSIAN  
CONVERSATION AND COMPOSITION.  
PREREQUISITE: RUSSIAN 403  
2-3 LECT HRS 2-3 CREDITS
- RUSS 479 INDEPENDENT STUDY  
SELECTED RESEARCH TOPICS ORGANIZED IN CONSULTATION WITH INDIVIDUAL  
STUDENTS OR INDIVIDUAL GUIDANCE IN READING, WRITING, AND LITERARY  
CRITICISM.  
PREREQUISITE: PERMISSION OF INSTRUCTOR OR CHAIRPERSON  
WEEKLY CONFERENCES, HRS TO BE ARRANGED  
STAFF 3 CREDITS
- RUSS 481 SPECIAL TOPICS  
482 STUDY OF SPECIAL TOPICS, VARYING EACH SEMESTER ACCORDING TO THE  
INSTRUCTOR  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS 3 CREDITS
- RUSS 59A METHODS AND PRACTICE TEACHING OF RUSSIAN IN SECONDARY SCHOOLS  
INSTRUCTION IN METHODS OF TEACHING RUSSIAN. SUPERVISION OF PRACTICE  
TEACHING IN SECONDARY SCHOOLS  
PREREQUISITE: 6 HOURS EDUCATION COURSE AND ADMISSION TO THE TEACHER  
CERTIFICATION PROGRAM  
3 LECT HRS, 20 HRS PRACTICE TEACHING  
STAFF 9 CREDITS
- RUSS 59A CURRICULUM AND METHODS STUDENT TEACHING-RUSSIAN  
PREREQUISITE: 6 HOURS EDUCATION COURSE AND ADMISSION TO THE  
TEACHER CERTIFICATION PROGRAM  
3 LECT HRS, 20 LAB HRS (PRACTICE TEACHING)  
STAFF 9 CREDITS

## SOCIOLOGY I

### GRADUATION REQUIREMENTS

The department requires a total of 27 semester hours of Sociology credit for a major in Sociology. The specific courses required for graduation are: (1) Sociology 101 (Introductory Sociology); (2) Sociology 350 (Social Statistics) or Sociology 351 (Methods of Social Research); and (3) Sociology 382 (Elements of Sociological Theory). In addition, majors must take six upper division courses in Sociology in meeting the total 27 credit hours required for a major. Effective with the Class of 1975, no cognate courses will be acceptable in lieu of courses in Sociology.

The department does not require, but strongly recommends, its majors to take Anthropology 101, Introductory Anthropology, and Psychology 101, Introductory Psychology. Beyond meeting the minimal requirements, a major is free to concentrate or specialize in any one of the "themes" among its curriculum or to take courses interspersed among the various themes.

### FIELD TRAINING

Field Training is provided in two programs of the department: (1) The Sociology and Urban Social Service Program (SUSS) and (2) the Program in Corrections. These programs involve practical training in an agency setting, following the acquisition of theoretical knowledge. See descriptions below.

### SOCIOLOGY AND URBAN SOCIAL SERVICE

The Sociology and Urban Social Service concentration is designed for dedicated students who wish, beginning in their sophomore year to major in Sociology as preparation for a youth-and-family serving career in an urban setting.

Students in this program take specially created sections of the sociology course offerings which coordinate their course work with field placement activity. Such students are expected to intern in a variety of social service agencies such as schools, hospitals, child guidance centers, housing services, family support and other community agencies.

Entering freshmen interested in applying for the Social Service Concentration should write to the Chairperson of the Sociology Department.

### SOCIOLOGY OF CORRECTIONS

A series of courses in the Sociology of Crime, Delinquency, and Corrections open to both majors and non-majors is offered in the College I department of Sociology for students who wish to pursue graduate study in this field; as well as in Criminal Justice, or to enter applied or research work in Criminology and Corrections following graduation. This curriculum emphasizes both theoretical and applied approaches. A practicum course in corrections is offered at upper division level, which entails supervised study and work in a criminal justice agency or research organization. In addition, Sociology courses in corrections can be supplemented through the Law and Justice curriculum in College I.

Interested students should contact the department of Sociology, College I for further information and advising. No formal application is necessary, however.

### INTERDISCIPLINARY AND FOUNDATION PROGRAMS

The department actively participates in the foundations course in Law and Justice, sponsored by College I. The Sociology course in Asian institutions is central to an emerging Asian Studies Program which may be developed by College I. Similarly, other departmental course offerings are central components in other interdisciplinary programs such as Black Studies, Ethnic Studies and Urban Studies.

No graduate degree is currently offered by the department of Sociology; however, a modest graduate program is being planned and is expected to be implemented within a year. (For information, write to the Chairperson, Department of Sociology).

### THE HONORS PROGRAM

The Honors Program is open to all qualified Sociology majors. Criteria for Honors in Sociology are as follows:

1. Sociology as the declared major
2. At least a 3.0 all college G.P.A.
3. At least a 3.25 C.P.A. in Sociology based on no less than 6 Sociology courses (currently 8 courses beyond Introductory Sociology are required).
  - A. At least 5 of these courses must be graded credit hours.
  - B. Students who have not completed 6 Sociology courses at the time of application (most applicants may fall in the category) can be considered if the balance of course credits are currently in progress and if the grade outcome maintains the C.P.A. requirements. In such instances, the curriculum committee can issue a tentative approval.
4. Senior standing, as defined by the UM/B Registrar, in the semester in which the Honors work will be undertaken. (Second semester Juniors can submit an Honors application providing that credits in progress are sufficient to give them senior standing in the following semester. Normally, however, most students will apply for Honors during the first semester of the senior year.

### ALPHA KAPPA DELTA

The Department of Sociology in College I co-sponsors with the department of Sociology in College II a chapter of Alpha Kappa Delta, the National Honor Society in Sociology. Alpha Kappa Delta is the first National Honor Society established at the University of Massachusetts/Boston. Membership is open to those students who have completed ten or more hours in Sociology with a grade point average of 3.0 or above. Admission to Alpha Kappa Delta usually occurs during the senior year.



## SOCIOLOGY COLLEGE II

Sociology majors are required to take a minimum of nine Sociology courses, including Sociology 101 (Introduction), Sociology 351 (Methods of Sociological Research) and Sociology 241 (Elements of Sociological Theory). Majors in College II are required also to take two courses in any other of the Social Sciences. Majors in College II may use any Sociological Methods course to meet the Methods course requirements. The Majors are encouraged to choose related subjects within the Social Sciences. The Departments limit up to two cognate courses from other social sciences to be counted toward the major. Students may submit such courses for approval for cognate credit. At the invitation of the department, students may take individual directed study with an emphasis on independent research. Students wishing to engage in independent study should submit a proposal for the consideration of the department.

### SOCIOLOGY 101 INTRODUCTION TO SOCIOLOGY

THE STRUCTURE OF SOCIETY, CULTURAL PATTERNS, AND GROUP LIFE. THE INDIVIDUAL AND SOCIALIZATION, GROUPS, INSTITUTIONS, SOCIAL SYSTEMS, SOCIAL CHANGE.  
3 LECT HRS  
STAFF  
4 CREDITS

### SOCIOLOGY 102 FURTHER TOPICS IN INTRODUCTORY SOCIOLOGY

A CONTINUATION OF INTRODUCTORY SOCIOLOGY FOR SECOND SEMESTER FRESHMAN IN THE SUSS PROGRAM, FOCUSING ON THE SOCIAL PROCESSES OF DEVIANANCE, CHANGE AND CONFLICT.  
PREREQUISITE: SOCIOLOGY 101 AND PARTICIPATION IN SUSS PROGRAM  
STAFF

### SOCIOLOGY 160 SOCIAL PROBLEMS AND SOCIAL POLICY

COURSE CONCENTRATING ON INSTITUTIONAL FORMATION AND CHANGE. SPECIFICALLY, IT WILL COVER THE DEFINITION AND EXPLANATION OF SOCIAL PROBLEMS, INDIVIDUAL, GROUP AND GOVERNMENTAL RESPONSES TO THEM, IMPLICATIONS OF SOCIAL POLICY, IN DEPTH CASE STUDIES AND DISCUSSION OF CONTEMPORARY SOCIAL PROBLEMS.  
PREREQUISITE: INTRO SOCIOLOGY  
3 LECT HRS  
MR. BLACKWELL, STAFF  
3 CREDITS

### SOCIOLOGY 200 HUMAN SERVICE ORGANIZATIONS

THEORY AND PRACTICE OF PEOPLE-PROCESSING AND PEOPLE-CHANGING, INTERPERSONAL BEHAVIOR AND GROUP DEVELOPMENT THROUGH OBSERVATION OF THE GROUP ITSELF AND HEARINGS FROM PSYCHOLOGY, ANTHROPOLOGY AND SOCIOLOGY.  
PREREQUISITE: SOCIOLOGY 101  
3 LECT HRS  
MR. FLIFEL, MS. TAGLIACCOZZO  
3 CREDITS

### SOCIOLOGY 201 YOUTH AND SOCIETY

AN EXAMINATION OF THEORIES AND RESEARCH ON YOUTH AND SOCIETY. PRESENT DAY PATTERNS OF YOUTHFUL DEVELOPMENT WILL BE CONTRASTED TO OTHER TYPES - BOTH IN WESTERN HISTORY AND IN OTHER CULTURES. THE RELATIONSHIP OF YOUTH TO MAJOR INSTITUTIONS (EDUCATIONAL, LEGAL, OCCUPATIONAL) WILL BE EXAMINED IN DETAIL.  
PREREQUISITE: SOCIOLOGY 101 PLUS ONE OTHER COURSE IN EITHER SOCIOLOGY OR ANTHROPOLOGY  
3 LECT HRS  
MR. JOHNSON  
3 CREDITS

### SOCIOLOGY 211 THE URBAN COMMUNITY

THE DEVELOPMENT OF THE CITY AS A COMPLEX FORM OF THE HUMAN COMMUNITY. HISTORY AND GROWTH OF URBANISM IN INDUSTRIAL SOCIETIES AND DEVELOPING NATIONS. URBAN CHANGE AND THE PROBLEM OF PLANNING.  
PREREQUISITE: SOCIOLOGY 101  
3 LECT HRS  
MR. LARSON, MR. NIKKEL, MR. BRILL  
3 CREDITS

### SOCIOLOGY 220 A SURVEY OF ASIAN SOCIETIES - CHINA AND JAPAN

THIS COURSE IS AN INTRODUCTORY STUDY OF THE INSTITUTIONS AND STRUCTURES OF EAST ASIAN SOCIETIES, ESPECIALLY OF CHINA AND JAPAN. IT WILL CONCENTRATE ON SELECTED TRADITIONAL INSTITUTIONS SUCH AS THE FAMILY, COMMUNITY, AND SOCIAL ASPECTS OF THE ECONOMY AND THEIR RELATIONS TO MODERNIZATION AND INDUSTRIALIZATION. COMPARISONS WILL BE MADE BETWEEN THESE EAST ASIAN SOCIETIES AND THE UNITED STATES.  
PREREQUISITE: INTRO SOCIOLOGY  
3 LECT HRS  
MR. MIYAKAWA  
3 CREDITS

### SOCIOLOGY 221 ASIAN MINORITIES IN AMERICA

AN INTRODUCTION TO THE ASIAN AMERICANS AND THEIR MAJOR CONTRIBUTIONS TO THE UNITED STATES. ANALYSES OF THEIR EXPERIENCE, INCLUDING ASPECTS SIGNIFICANT TO A BETTER UNDERSTANDING OF AMERICAN GROUP RELATIONS GENERALLY, SUCH AS THOSE BETWEEN BLACKS AND CAUCASIANS AND AMONG WHITE ETHNICS.  
PREREQUISITE: INTRO SOCIOLOGY  
3 LECT HRS  
MR. MIYAKAWA  
3 CREDITS

### SOCIOLOGY 226 POLITICS AND SOCIOLOGY OF ECOLOGY

POLITICAL PROCESSES AS GENERAL PHENOMENA OCCURRING IN ALL SOCIAL AND POLITICAL INSTITUTIONS, CONSIDERED THROUGH TOFAS DERIVED FROM THE STUDY OF POLITICAL BEHAVIOR. ORGANIZATION THEORY AND POLITICAL ANTHROPOLOGY AND EVALUATED IN TERMS OF NORMATIVE POLITICAL PHILOSOPHY.  
PREREQUISITE: INTRO SOCIOLOGY  
3 LECT HRS  
STAFF  
3 CREDITS

### SOCIOLOGY 231 SOCIAL STRATIFICATION

SOCIAL CLASSES IN TRADITIONAL AND INDUSTRIAL SOCIETIES, CLASSES, CASTES, AND MOBILITY, THEORIES OF CLASS RELATIONSHIPS AND CONFLICTS.  
PREREQUISITE: SOCIOLOGY 101 AND PSYCHOLOGY 101  
3 LECT HRS  
MR. WOOD  
4 CREDITS

### SOCIOLOGY 241 ELEMENTS OF SOCIOLOGICAL THEORY

READING AND DISCUSSION OF BASIC SOCIOLOGICAL WORKS IN THEORY. RELEVANCE OF EARLIER AND CONTEMPORARY SOCIOLOGICAL INTERESTS AND RESEARCH.  
PREREQUISITE: SOCIOLOGY 101 AND JUNIOR STANDING.  
3 LECT HRS  
STAFF  
3 CREDITS

### SOCIOLOGY 242 FAMILY

A COMPARATIVE AND HISTORICAL ANALYSIS OF FAMILY SYSTEMS. EMPHASIS ON THE DEVELOPMENT AND FUTURE PROSPECTS OF THE NUCLEAR FAMILY IN MIDDLE-CLASS INDUSTRIAL SOCIETY.  
PREREQUISITE: SOCIOLOGY 101  
3 LECT HRS  
STAFF  
3 CREDITS

### SOCIOLOGY 261 SOCIAL DEVIANANCE AND CONTROL

THE SOCIAL CONDITIONS OF INDIVIDUAL AND GROUP BEHAVIOR DISORDERS. DEVIANANT SUBCULTURES AND SOCIAL CONTROL.  
PREREQUISITE: SOCIOLOGY 101  
3 LECT HRS  
MR. GARRETT, MS. MORGAN, MR. KRONISH  
3 CREDITS

### SOCIOLOGY 271 THEORY OF SOCIAL CHANGE

ALTERNATIVE THEORIES OF SOCIAL CHANGE. AT THE SOCIETAL AND COMMUNITY LEVELS. CLASSICAL THEORIES OF CHANGE, INCLUDING DURKHEIM, WEBER, AND MARX, AND CONTEMPORARY THEORIES. SELECTED APPLICATIONS.  
PREREQUISITE: SOCIOLOGY 316 OR SOCIOLOGY 101 AND PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. WOOD  
3 CREDITS

### SOCIOLOGY 272 COLLECTIVE BEHAVIOR

THE NATURE AND FORM OF RELIGIOUS, ETHNIC, RACIAL AND OTHER TYPES OF

SOCIAL 277 SOCIAL INTERACTION IN GROUPS  
THE DYNAMICS OF FACE-TO-FACE SOCIAL INTERACTION IN THE CONTEXT OF GROUPS. INVESTIGATION OF THE APPLICATION OF SMALL GROUP RESEARCH AND THEORY TO THE FUNCTIONING OF NATURAL GROUPS. ATTENTION TO THE FORMATIVE AND AFFECTIVE SUBSYSTEMS, ROLE DIFFERENTIATION, AND DECISION PROCESSES. INFORMAL ORGANIZATION.  
PREREQUISITE: INTRODUCTORY SOCIOLOGY AND PSYCHOLOGY  
3 LECT HRS  
STAFF  
3 CREDITS

SOCIAL 281 SOCIETY AND THE INDIVIDUAL  
BASIC SURVEY OF THE SOCIAL ENVIRONMENT OF INDIVIDUALS.  
PREREQUISITE: SOCIOLOGY 101 AND PSYCHOLOGY 101  
3 LECT HRS  
MS. KONEH, MR. WEISS  
3 CREDITS

SOCIAL 300 COMMUNICATIONS AND OPINION  
SOCIOLOGICAL AND POLITICAL PERSPECTIVES ON MASS COMMUNICATIONS.  
PREREQUISITE: SOCIOLOGY 101 AND JUNIOR STANDING  
3 LECT HRS  
STAFF  
3 CREDITS

SOCIAL 321 RACIAL AND ETHNIC RELATIONS  
CONFLICTS AND ACCOMMODATIONS AMONG DIFFERING RACIAL AND ETHNIC GROUPS; NATURE AND CHARACTER OF PREJUDICES AND DISCRIMINATION. MINORITY-MAJORITY RELATIONS IN SELECTED SOCIETIES.  
PREREQUISITE: SOCIOLOGY 101  
3 LECT HRS  
MR. BLACKWELL, MR. ROHRINS  
3 CREDITS

SOCIAL 322 THE BLACK FAMILY  
A SOCIO-HISTORICAL ANALYSIS OF THE EXPERIENCES OF THE BLACK FAMILY IN THE UNITED STATES FROM SLAVERY TO PRESENT. EMPHASIS WILL BE ON THE MODE OF ADJUSTMENT AND ADAPTATION TO THE FORCES OF DOMESTIC COLONIALISM INCLUDING SLAVERY, RACISM, AND ECONOMIC DISCRIMINATION. IT WILL ALSO FOCUS ON STRATIFICATION IN THE BLACK COMMUNITY AS WELL AS ISSUES IN SOCIALIZATION AND PERSONALITY DEVELOPMENT.  
PREREQUISITE: SOCIOLOGY 101  
3 LECT HRS  
STAFF  
3 CREDITS

SOCIAL 330 SOCIOLOGY OF THE FUTURE  
FUTURISM--THE STUDY OF OUR RAPIDLY CHANGING TECHNOLOGICAL AND SOCIAL ENVIRONMENT AND EXAMINATION OF THE THEORIES AND TECHNIQUES BY WHICH THE FUTURE CAN BE FORECASTED, PREDICTED, ANTICIPATED OR PLANNED.  
PREREQUISITE: SOCIOLOGY 101 AND 2 UPPER-LEVEL SOCIOLOGY COURSES  
3 LECT HRS  
MS. HINSTOCK  
3 CREDITS

SOCIAL 332 SOCIOLOGY OF EDUCATION  
THE EDUCATIONAL SYSTEMS OF VARIOUS TYPES OF WESTERN AND NON-WESTERN SOCIETIES AND THE CHANGES IN WESTERN SYSTEMS IN MODERN HISTORY. WITH PARTICULAR REFERENCE TO THE U.S. THE STRUCTURAL FEATURES OF TYPES OF AMERICAN SCHOOLS AND COLLEGES AND THE RELEVANCE OF THESE FEATURES TO THE ECONOMY AND THE IDEOLOGY.  
PREREQUISITE: SOCIOLOGY 101  
3 LECT HRS  
MS. HINSTOCK, MR. ROHRINS, MS. TABLIACCOZZO, MR. HAFE  
3 CREDITS

SOCIAL 333 SOCIOLOGY OF RELIGION  
RELIEF SYSTEMS AND SOCIAL STRUCTURES OF RELIGIOUS GROUPS. IMPACT OF RELIGIOUS SYSTEMS ON FAMILIAL, ECONOMIC, POLITICAL AND OTHER INSTITUTIONS.  
PREREQUISITE: SOCIOLOGY 101  
3 LECT HRS  
MR. MIYAKAWA, MR. ZAMM  
3 CREDITS

SOCIAL 335 POLITICAL SOCIOLOGY  
AN INTERDISCIPLINARY STUDY WITH STRESS ON THE NATURE OF POWER AND ITS DISTRIBUTION IN SOCIETY. ALTERNATIVE APPROACHES TO CHANGING AND TRANSFORMING POWER STRUCTURES.  
PREREQUISITE: SOCIOLOGY 101 AND POLITICS 122  
3 LECT HRS  
MR. BROWN, MR. ROTHLAT, MS. STICHTER  
3 CREDITS

SOCIAL 342 AGING AND SOCIETY  
AN EXAMINATION OF THEORIES AND RESEARCH ON AGING AND SOCIETY. COURSE IS ORGANIZED IN TWO SECTIONS. THE FIRST SECTION EXPLORES THE GENERAL RELATIONSHIP OF THE AGING PROCESS AND THE AGED TO THE SOCIAL, ECONOMIC AND POLITICAL SYSTEMS IN A YOUTH-ORIENTED AND WORK-ORIENTED SOCIETY. THE SECOND SECTION DRAWS UPON CROSS-NATIONAL AND CROSS-CULTURAL MATERIAL.  
PREREQUISITE: SOCIOLOGY 101  
3 LECT HRS  
MR. KAMARA  
3 CREDITS

SOCIAL 350 ELEMENTS OF SOCIAL STATISTICS  
FUNDAMENTALS OF SOCIAL STATISTICS. SPECIAL EMPHASIS ON PROBABILITY, TESTS OF SIGNIFICANCE, AND MEASURES OF ASSOCIATION.  
PREREQUISITE: SOCIOLOGY 101 AND 4 HOURS OF UPPER DIVISION SOCIOLOGY.  
JUNIOR STANDING OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. MOVANE01, MR. JAMES  
3 CREDITS

SOCIAL 351 METHODS OF SOCIOLOGICAL RESEARCH  
DESIGN OF SOCIOLOGICAL RESEARCH AND METHODS OF INQUIRY. ORGANIZATION AND ANALYSIS OF DATA. DEVELOPMENT OF RESEARCH PROJECTS.  
PREREQUISITE: SOCIOLOGY 101 AND JUNIOR STANDING  
3 LECT HRS  
STAFF  
3 CREDITS

SOCIAL 355 COMPARATIVE SOCIAL STRUCTURES  
THE COMPARATIVE STUDY OF LARGE-SCALE SOCIAL SYSTEMS WITH EMPHASIS ON NATIONAL SOCIETIES. THE THEORY AND METHODOLOGY OF COMPARISON AND COMPARISONS OF MAJOR FEATURES OF SOCIAL SYSTEMS. CONSTRUCTION OF TYPOLOGIES.  
PREREQUISITE: SOCIOLOGY 101 AND JUNIOR STANDING  
3 LECT HRS  
MS. STICHTER AND STAFF  
3 CREDITS

SOCIAL 361 CRIMINOLOGY  
A GENERAL SURVEY AND ANALYSIS OF ADULT CRIME. ATTENTION TO HISTORICAL DEVELOPMENT OF CRIMINOLOGICAL THOUGHT, SOCIETAL REACTION TO CRIME AND BEHAVIORAL SYSTEMS. EMPHASIS ON THEORIES OF CRIMINALITY AND ISSUES IN THE ADMINISTRATION OF JUSTICE BY POLICE AND COURTS.  
PREREQUISITE: SOCIOLOGY 101 AND JUNIOR STANDING  
3 LECT HRS  
MR. BROWN, MR. GARRETT  
3 CREDITS

SOCIAL 373 POPULATION AND ECOLOGY  
THE POPULATION EXPLOSION, BIRTH, DEATH, AND ILLNESS. IMMIGRATION AND EMIGRATION. HOW THE HUMAN AND PHYSICAL ENVIRONMENT INTERACTS WITH QUESTIONNAIRE CONSTRUCTION, INTERVIEWING, AND DATA ANALYSIS.  
PREREQUISITE: SOCIOLOGY 101  
3 LECT HRS  
MR. DICKINSON  
3 CREDITS

SOCIAL 375 SURVEY RESEARCH METHODS  
THE DESIGN OF THE COURSE IS LEARNING BY DOING. EACH STUDENT WILL PARTICIPATE IN THE DEVELOPMENT, CONCEPTUALIZATION, SAMPLING, OF AN ASPECT OF A CENTRAL THEME OF THE COURSE, SUCH AS CHANGING PARENTAL ROLES. WITHIN THIS BROAD AREA STUDENTS WILL DEVELOP THEIR OWN AREA OF INQUIRY. THERE WILL BE A MID-TERM EXAMINATION AND A FINAL PROJECT PAPER.  
PREREQUISITE: SOCIOLOGY 101 AND PSYCHOLOGY 101  
3 LECT HRS  
STAFF  
3 CREDITS

SOCIAL 377 LABORATORY IN GROUP PROCESSES AND INTERPERSONAL COMMUNICATION  
THE PURPOSE OF THIS COURSE IS TO PROVIDE STUDENTS WITH A LEARNING



- EXPERIENCE IN SMALL GROUP DEVELOPMENT THROUGH PARTICIPATION AND ANALYSIS OF OUTGOING GROUP PROCESSES AND INTERPERSONAL INTERACTIONS WITHIN A LABORATORY SETTING. THIS LEARNING WILL BE PARTIALLY EXPERIMENTAL AND PARTLY THROUGH LECTURES, DISCUSSIONS, READINGS, AND PAPERS. THE AIM IS NOT ONLY INTELLECTUAL KNOWLEDGE, DEVELOPING SKILLS IN DECISION MAKING, PROBLEM ANALYSIS, PROBLEM SOLVING AND LEADERSHIP WILL ALSO BE STRESSED.  
3 LECT HRS  
3 CREDITS  
STAFF
- SOCIAL 382 SOCIAL PSYCHOLOGY OF SEX ROLES-MEN AND WOMEN IN SOCIETY  
AN ANALYSIS OF MALE AND FEMALE ROLES IN SOCIETY WITH CONSIDERATION OF BIOLOGICAL AND PSYCHOLOGICAL FACTORS. ATTENTION TO SOCIALIZATION PROCESSES WHICH REFLECT SOCIETIES FUNCTIONAL DEFINITION OF ACCEPTABLE AND DEVIANT SEX ROLES.  
3 LECT HRS  
3 CREDITS  
MS. KOHEN
- SOCIAL 384 MEDICAL SOCIOLOGY  
FOCUSES ON THE CONTRIBUTION OF THE SOCIAL SCIENCES TO THE FIELD OF MEDICAL CARE. THIS IS DONE ALONG TWO DIMENSIONS - 1. ILLNESS AND TREATMENT ARE DEFINED FROM A SOCIO-CULTURAL, BIOLOGICAL PERSPECTIVE. 2. SOCIOLOGICAL THEORIES AND STUDIES ARE THEN BROUGHT TO BEAR ON THE PROBLEMS OF DEFINITIONS OF ILLNESS, ILLNESS BEHAVIOR, THE USE OF MEDICAL SERVICES, THE ORGANIZATION OF MEDICAL SERVICES AND THE FUTURE FRONTIERS OF SOCIAL SCIENCE IN MEDICINE.  
3 LECT HRS  
3 CREDITS  
MR. JAMES, MS. MORGAN
- SOCIAL 385 HOSPITALS  
APPROACHES TO THE STUDY OF COMPLEX ORGANIZATIONS ARE EXAMINED THROUGH A FOCUS ON THE GENERAL HOSPITAL. THE ANALYSIS WILL INCLUDE: TRENDS IN EXTERNAL AND INTERNAL PATTERNS OF SOCIAL CONTROL, DISTINGUISHING ORGANIZATIONAL FEATURES OF THE HOSPITAL; THE ROLE OF PROFESSIONALS AND MANAGERS IN THE CONTEXT OF WORK TECHNOLOGY AND WORK ORGANIZATION; INTERACTIONS BETWEEN PROFESSIONALS AND CLIENTS AND THE MANAGEMENT OF PATIENT CARE UNDER VARYING CONDITIONS.  
3 LECT HRS  
3 CREDITS  
MS. TAGLIACCOZZO, MS. BINSTOCK
- SOCIAL 411 COMMUNITY ORGANIZATION  
MAJOR PRINCIPLES AND CONCEPTS OF COMMUNITY ORGANIZATION WILL BE EXPLORED. PARTICULAR EMPHASIS WILL BE PLACED ON CONSIDERING THE POTENTIALITIES AND LIMITS OF VARIOUS TYPES OF COMMUNITY ORGANIZATIONS TO ACHIEVE SOCIAL CHANGE IN URBAN NEIGHBORHOODS.  
3 LECT HRS  
3 CREDITS  
STAFF
- SOCIAL 421 MINORITIES AND HOUSING  
IT IS THE PURPOSE OF THIS COURSE TO EXPLORE THE RELATION OF URBAN HOUSING AND THE LOCATION OF MINORITIES WITHIN THE STRUCTURE OF AMERICAN SOCIETY. SPECIFICALLY, IT WILL FOCUS UPON THE PROCESSES INVOLVED IN MATCHING PEOPLE AND HOUSING, THE TECHNIQUES AND PROCESSES INVOLVED IN LIMITING HOUSING OPPORTUNITIES FOR SOME PEOPLE, MINORITY STATUS AND HOUSING OPPORTUNITY, THE EFFECTS OF DIFFERENTIAL HOUSING OPPORTUNITIES, AND PROPOSED RESOLUTIONS AND CORRECTIVE MEASURES FOR RE-ARRANGING THE DISTRIBUTION OF HOUSING.  
3 LECT HRS  
3 CREDITS  
MR. NIKKEL
- SOCIAL 427 MINORITY ROLE BEHAVIOR  
A SOCIOLOGICAL ANALYSIS OF THE VARIOUS RESPONSES, SELF-DEFINITIONS AND BEHAVIOR PATTERNS DEVELOPED BY MINORITY GROUPS TO
- THEIR STATUS AS MINORITIES, WITH SPECIAL EMPHASIS ON THE UNITED STATES.  
3 LECT HRS  
3 CREDITS  
MR. BLACKWELL
- SOCIAL 435 THE SOCIOLOGY AND PSYCHOLOGY OF COMPLEX ORGANIZATION  
TYPES OF ORGANIZATIONAL STRUCTURES BOTH HISTORICALLY AND IN INDUSTRIAL SOCIETIES. PROFIT MAKING AND NON-PROFIT MAKING ORGANIZATIONS SUCH AS SCHOOLS, BUSINESSES AND PUBLIC BUREAUCRACIES, CORPORATIONS, CHURCHES, HOSPITALS, PRISONS.  
3 LECT HRS  
3 CREDITS  
MR. JAMES AND MS. BINSTOCK
- SOCIAL 440 SOCIOLOGY OF KNOWLEDGE AND IGNORANCE  
EPISTEMOLOGICAL SOCIOLOGY - SOCIAL DETERMINANTS OF THE GAP BETWEEN REALITY AND OUR KNOWLEDGE OF IT.  
3 LECT HRS  
3 CREDITS  
MR. DICKINSON
- SOCIAL 441 CONTEMPORARY SOCIOLOGICAL THEORY  
A CONCENTRATED EXAMINATION OF RECENT DEVELOPMENTS IN THE STUDY OF HUMAN INTERACTION AND THE PROBLEMS OF SOCIAL ORDER AND SOCIAL CHANGE. ISSUES INVOLVING THE GOALS OF SOCIOLOGY, THE ETHNICS OF SOCIAL RESEARCH, AND BEHAVIOR CONTROL WILL BE A MAJOR FOCUS.  
3 LECT HRS  
3 CREDITS  
MR. LARSON
- SOCIAL 450 EVALUATION RESEARCH  
THE APPLICATION OF RESEARCH METHODS TO THE EVALUATION OF SOCIAL PROGRAMS. THE COURSE ASSUMES KNOWLEDGE OF BASIC RESEARCH METHODS AND WILL USE EXAMPLES FROM THE FIELDS OF CORRECTIONS, HEALTH SYSTEMS, AND URBAN AFFAIRS.  
3 LECT HRS  
3 CREDITS  
STAFF
- SOCIAL 451 FIELD WORK METHODS  
INTENSIVE TRAINING IN OBSERVATIONAL METHODS, READINGS OF THEORETICAL ISSUES INVOLVED, CONCENTRATED COMMUNITY ORIENTED FIELD WORK UNDER CLOSE SUPERVISION.  
3 LECT HRS  
3 CREDITS  
STAFF
- SOCIAL 452 NONEXPERIMENTAL METHODS IN SOCIOLOGY  
DESIGN AND ANALYSIS OF NONEXPERIMENTAL RESEARCH. INCLUDES CONSTRUCTION OF INDICES AND SCALES, METHODS OF CONTROL IN SURVEY RESEARCH, MULTIVARIATE ANALYSIS OF QUALITATIVE AND QUANTITATIVE DATA, ANALYSIS OF CASUAL MODELS AND COMPUTER APPLICATION TO SOCIOLOGICAL DATA.  
3 LECT HRS  
3 CREDITS  
MR. NOVAKOVI
- SOCIAL 462 JUVENILE DELINQUENCY  
THE NATURE AND EXTENT OF DELINQUENCY, EXPLAINING THEORIES, DELINQUENT SURCULTURE, AND PROGRAMS FOR CONTROL AND PREVENTION.  
3 LECT HRS  
3 CREDITS  
MR. BLACKWELL, MR. BROWN, MR. GARRETT
- SOCIAL 463 CORRECTIONS  
PRISONS, JAILS, PAROLE, AND PROBATION, ATTENTION TO INMATE SOCIAL STRUCTURE, PHILOSOPHY UNDERLYING CORRECTIONAL SYSTEM AND MODERN TREATMENT APPROACHES.  
3 LECT HRS  
3 CREDITS  
MR. BROWN, MR. GARRETT



SOCIAL 464 PRACTICUM IN CORRECTION  
SUPERVISED FIELD PLACEMENT IN A CORRECTIONAL SETTING. SEMINAR ON PROBLEMS RELATING TO STUDENTS' FIELD EXPERIENCE AND ON SPECIAL ISSUES IN CORRECTION INCLUDING PRISON REFORM AND LEGISLATION, LEGAL HANDLING OF ADULT AND JUVENILE OFFENDERS, PRISON ADMINISTRATION AND ORGANIZATION.  
3 LECT HRS  
MR. BROWN, MR. GARRETT  
6 CREDITS

SOCIAL 465 POLICE IN SOCIETY  
AN EXAMINATION OF POLICE AS A SYSTEM OF SOCIAL CONTROL, SURVEY OF MAJOR STUDIES OF POLICE BY SOCIOLOGISTS AND GOVERNMENT COMMISSIONS, EMPHASIS PLACED ON POLICE ORGANIZATION, PATTERNS AND CONSEQUENCES OF POLICE TRAINING, HISTORICAL AND CROSS-CULTURAL PERSPECTIVES OF POLICE SYSTEMS AND STUDIES OF POLICE DISCRETION AND POLICE-CITIZEN INTERACTION.  
PREREQUISITE: SOCIOLOGY 101, 463 AND PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. BROWN, MR. GARRETT  
3 CREDITS

SOCIAL 466 RESEARCH STUDIES IN THE SOCIOLOGY OF ALCOHOLISM  
AN IN-DEPTH ANALYSIS OF SOCIOLOGICAL FACTORS RELATED TO DRINKING BEHAVIOR, ALCOHOLISM, AND TREATMENT AND PREVENTION PROGRAMS. SPECIAL EMPHASIS PLACED ON THEORY, RESEARCH STUDIES AND METHODOLOGICAL PROBLEMS IN STUDYING ALCOHOLIC POPULATIONS. ATTENTION ALSO GIVEN TO SPECIAL TOPICS--ALCOHOL AND CRIME, TRAFFIC SAFETY, FAMILY CRISIS, INDUSTRY AND SKID ROW.  
PREREQUISITE: SOCIOLOGY 101, SENIOR STANDING, AND PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. GARRETT  
3 CREDITS

SOCIAL 467 SOCIOLOGY OF LAW  
A GENERAL ANALYSIS OF THE SOCIAL ORIGINS AND CONSEQUENCES OF LAW AND LEGAL PROCESS. SPECIAL EMPHASIS ON LAW AS A METHOD OF CONFLICT RESOLUTION, AS A SOCIAL CONTROL STRUCTURE, AND ON LAW AND SOCIAL CHANGE. ATTENTION ALSO GIVEN TO LAW IN OTHER SOCIETIES, INCLUDING NONLITERATE SOCIETIES, TO THE EVOLUTION AND DEVELOPMENT OF LEGAL STRUCTURES, AND TO PATTERNS OF JUDICIAL PROCESS AND CRIMINAL LAW.  
PREREQUISITE: SOCIOLOGY 101 AND 466 SEM CREDITS IN SOCIOLOGY, JR. OR SR.  
3 LECT HRS  
MR. JOHNSON  
3 CREDITS

SOCIAL 468 SOCIAL PSYCHIATRY  
SOCIOLOGICAL ANALYSIS OF PSYCHIATRIC THEORIES AND PRACTICES, EXAMINATION OF THE EFFECT OF SOCIAL STRUCTURE ON THE MANUFACTURE, DIAGNOSIS AND TREATMENT OF MENTAL DISORDERS.  
PREREQUISITE: 3 COURSES IN SOCIOLOGY OR PSYCHOLOGY 101, JR. OR SR STANDING  
3 LECT HRS  
MR. MOVEMENT  
3 CREDITS

SOCIAL 471 MODERNIZATION  
SOCIAL AND ECONOMIC ASPECTS OF DEVELOPMENT AND MODERNIZATION IN VARIOUS SOCIETIES.  
PREREQUISITE: SOCIOLOGY 101 AND ANTHROPOLOGY 101- JR OR SR STANDING  
3 LECT HRS  
MR. WOOD  
3 CREDITS

SOCIAL 472 CONFLICT IN SOCIETY  
AN EXPLORATION INTO THE NATURE, SOURCES, TYPES AND EFFECTS OF CONFLICT CONTROL AND RESOLUTION, PARTICULARLY THEORETICAL IN APPROACH WITH EMPHASIS UPON CONFLICT AS A SOCIAL PROCESS.  
PREREQUISITE: SOCIOLOGY 101  
3 LECT HRS  
STAFF  
3 CREDITS

SOCIAL 473 SOCIOLOGY OF SOCIAL MOVEMENTS  
ANALYSIS OF GENERAL CHARACTERISTICS OF SOCIAL MOVEMENTS AS A VEHICLE OF SOCIAL CHANGE - WITH FOCUS ON SELECTED HISTORICAL SOCIAL MOVEMENTS.

PREREQUISITE: SOCIOLOGY 101, SENIOR OR GRADUATE STANDING.  
3 LECT HRS  
MR. ZAHN, STAFF  
3 CREDITS

SOCIAL 474 IDEOLOGY AND SOCIAL CONTROL IN SOUTHERN AFRICA AND LATIN AMERICA  
FROM A COMPARATIVE PERSPECTIVE, THE EXERCISE AND STRUCTURE OF POWER IN SELECTED NATIONS, STATES OF LATIN AMERICA AND SOUTHERN AFRICA.  
PREREQUISITE: SOCIOLOGY 101  
3 LECT HRS  
STAFF  
3 CREDITS

SOCIAL 475 SOCIALIZATION  
THEORIES AND RESEARCH ON SOCIALIZATION FROM A SOCIOLOGICAL-SOCIAL PSYCHOLOGICAL PERSPECTIVE. EMPHASIS ON SOCIALIZATION DURING CHILDHOOD AND CONTINUITIES AND DISCONTINUITIES BETWEEN CHILD AND ADULT SOCIALIZATION.  
PREREQUISITE: SOCIOLOGY 101 AND SOCIOLOGY 201, JR OR SR STANDING  
3 LECT HRS  
MS. KORN  
3 CREDITS

SOCIAL 476 MEDICAL CARE SYSTEMS  
THIS COURSE WILL PURSUE A COMPARATIVE EXAMINATION AND ANALYSIS OF MEDICAL CARE SYSTEMS. A GENERAL SYSTEM FRAMEWORK WILL BE USED. THE STRATEGY FOR ANALYSIS WILL BE TO ANALYZE VARIOUS SYSTEMS IN TERMS OF THE PROPERTIES OF THE SYSTEMS AND THE INTERRELATIONS AND THE INTERDEPENDENCIES OF THE PROPERTIES. THERE WILL BE ATTEMPTS TO CONNECT THE STRUCTURES AND THE OPERATIONS OF THE SYSTEMS TO THE LARGER SOCIETAL STRUCTURES OF THE SOCIETIES. THE FOCUS WILL BE ON MEDICAL CARE IN MODERN, INDUSTRIALIZED SOCIETIES.  
PREREQUISITE: SENIOR STANDING AT LEAST, THREE COURSES IN SOCIOLOGY, OF WHICH TWO MUST BE SOCIOLOGY 101 AND SOCIOLOGY 344  
3 LECT HRS  
STAFF  
3 CREDITS

SOCIAL 47A DIRECTED STUDY IN SOCIOLOGY  
STUDENTS INVITED BY THE DEPARTMENT TO CONDUCT INDEPENDENT RESEARCH DURING THE SENIOR YEAR. PERIODIC CONSULTATION AND GUIDANCE PROVIDED BY THE STAFF.  
PREREQUISITE: SOCIOLOGY 101, SR STANDING  
HRS BY ARRANGEMENT  
STAFF  
1-4 CREDITS

SOCIAL 479 DIRECTED STUDY IN SOCIOLOGY  
STUDENTS INVITED BY THE DEPARTMENT TO CONDUCT INDEPENDENT RESEARCH DURING THE SENIOR YEAR. PERIODIC CONSULTATION AND GUIDANCE PROVIDED BY THE STAFF.  
PREREQUISITE: SOCIOLOGY 101, SR STANDING  
HRS BY ARRANGEMENT  
STAFF  
1-4 CREDITS

SOCIAL 480 SPECIAL TOPICS  
INTENSIVE STUDY OF SPECIAL TOPICS VARYING EACH YEAR ACCORDING TO INSTRUCTOR.  
PREREQUISITE: SOCIOLOGY 101 AND PERMISSION OF INSTRUCTOR  
3 LECT HRS  
STAFF  
3 CREDITS

SOCIAL 481 SPECIAL TOPICS  
INTENSIVE STUDY OF SPECIAL TOPICS VARYING EACH YEAR ACCORDING TO INSTRUCTOR.  
PREREQUISITE: SOCIOLOGY 101 AND PERMISSION OF INSTRUCTOR  
3 LECT HRS  
STAFF  
3 CREDITS

SOCIAL 484 SOCIOLOGY OF HEALTH AND HEALERS  
SOCIAL ISSUES IN CONCEPTS OF HEALTH CARE ARE EXPLORED AND SOCIOLOGICAL RESEARCH ON HEALERS IS SURVEYED. TOPICS INCLUDE SOCIALIZATION, PROFESSIONALISM, AND ORGANIZATION OF A VARIETY OF HEALERS.  
PREREQUISITE: SOC 101, SOC 304, JR OR SR STANDING  
3 LECT HRS  
3 CREDITS

SOCIAL 485 SEMINAR ON SINGLE PARENT FAMILIES  
A SEMINAR DEALING WITH THE SINGLE PARENT FAMILY EXPERIENCE FROM THE POINT OF VIEW OF BOTH SOCIAL SCIENTISTS AND OF PEOPLE LIVING IN SINGLE PARENT FAMILIES.  
3 LECT HRS  
MR. WEISS  
3 CREDITS

# SPANISH

## GRADUATION REQUIREMENTS - College I

Spanish majors are required to take ten semesters of advanced courses. At least three of them should be in Spanish Literature and three in Spanish American Literature. Otherwise, majors are expected to choose courses that best satisfy their own interest and needs; but, in planning their program, must obtain assistance from their departmental advisors. Honors Thesis: students may receive 3 credits toward their total major credits for acceptance work on Honors Thesis written under the direction of a professor from the department.

## College II

In recognition of the different educational and vocational goals of students, two major programs are available: The Literature Major and the Language Major.

- A. Literature majors are required to take Literary Arts, The Senior Seminar, and eight additional semester courses in literature on the three hundred level or higher. They are strongly advised to take at least two Genre survey courses (Novel, Poetry, Theatre), plus Don Quijote.
- B. Language majors are required to take Language Arts and Literary Arts, plus eight semester courses on the three hundred level or higher, of which at least four must be in literature. Non-native speakers are strongly advised to take Advanced Conversation, Advanced Composition and Spanish Civilization. Honors Theses: with department approval, and in conjunction with the senior seminar, Spanish majors may receive three credits toward their total of thirty major credits for acceptable work on an Honors Thesis written under the direction of an advisor from the Spanish department.

Methods and practice teaching or Spanish in secondary schools (or bilingual programs) may count for only three credits toward the Spanish major.

|      |     |                                                                                                                                                                                                                                                                                                        |           |
|------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| SPAN | 101 | ELEMENTARY SPANISH<br>FOR STUDENTS WITH NO CREDITABLE TRAINING IN SPANISH. AN INTENSIVE STUDY OF THE FOUR LANGUAGE SKILLS BASED ON AN AUDIO-LINGUAL APPROACH.<br>4 LECT HRS, 1 LAB HR<br>STAFF                                                                                                         | 4 CREDITS |
| SPAN | 102 | ELEMENTARY SPANISH<br>A CONTINUATION OF SPANISH 101. AN INTENSIVE STUDY OF THE FOUR LANGUAGE SKILLS BASED ON AN AUDIO-LINGUAL APPROACH.<br>4 LECT HRS, 1 LAB HR<br>STAFF                                                                                                                               | 4 CREDITS |
| SPAN | 115 | INTENSIVE ELEMENTARY SPANISH<br>AN INTENSIVE STUDY OF THE FOUR LANGUAGE SKILLS FOR THOSE WHO WISH TO DO A FULL YEAR OF ELEMENTARY SPANISH IN ONE SEMESTER. MAY BE TAKEN FOR CREDIT BY STUDENTS WHO HAVE STUDIED TWO YEARS IN HIGH SCHOOL AND WISH TO START OVER.<br>4 LECT HOURS, 2 LAB HOURS<br>STAFF | 4 CREDITS |
| SPAN | 201 | INTERMEDIATE SPANISH<br>AN ORAL REVIEW AND FURTHER STUDY OF THE LANGUAGE SKILLS WITH READINGS IN SPANISH AND SPANISH-AMERICAN LITERATURE AND CULTURE.<br>PREREQUISITE: SPANISH 102 OR EQUIVALENT.<br>3 LECT HRS, 1 LAB HRS<br>STAFF                                                                    | 3 CREDITS |
| SPAN | 202 | INTERMEDIATE SPANISH<br>A CONTINUATION OF SPANISH 201. AN ORAL REVIEW AND FURTHER STUDY OF THE LANGUAGE SKILLS WITH READINGS IN SPANISH AND SPANISH-AMERICAN LITERATURE AND CULTURE.<br>PREREQUISITE: SPANISH 201 OR EQUIVALENT<br>3 LECT HRS, 1 LAB HRS<br>STAFF                                      | 4 CREDITS |

|      |     |                                                                                                                                                                                                                                                                                                                                                                                                              |           |
|------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| SPAN | 203 | AUDIO-LINGUAL INTERMEDIATE SPANISH<br>FURTHER DEVELOPMENT OF LANGUAGE SKILLS USING AN AUDIO-LINGUAL APPROACH. A STUDENT MAY NOT RECEIVE CREDIT FOR BOTH 201 AND 203.<br>PREREQUISITE: SPANISH 102 OR 115 OR EQUIVALENT<br>4 LECT HRS<br>STAFF                                                                                                                                                                | 4 CREDITS |
| SPAN | 204 | AUDIO-LINGUAL INTERMEDIATE SPANISH<br>A CONTINUATION OF SPANISH 203. FURTHER DEVELOPMENT OF THE LANGUAGE SKILLS USING AN AUDIO-LINGUAL APPROACH. A STUDENT MAY NOT RECEIVE CREDIT FOR BOTH 202 AND 204.<br>PREREQUISITE: SPANISH 203 OR EQUIVALENT<br>4 LECT HRS<br>STAFF                                                                                                                                    | 4 CREDITS |
| SPAN | 211 | SPANISH COMPOSITION<br>OPEN ONLY TO SPANISH- SPEAKING STUDENTS. TECHNIQUES IN WRITING. PROBLEMS OF WRITTEN SPANISH, STYLE AND CONNECTNESS. EXERCISES IN DIFFERENT KINDS OF COMPOSITION.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                               | 3 CREDITS |
| SPAN | 215 | INTENSIVE INTERMEDIATE SPANISH<br>A CONTINUATION OF SPANISH 115 FOR THOSE WHO WISH TO DO A FULL YEAR OF INTERMEDIATE SPANISH IN ONE SEMESTER. STUDENTS WHO HAVE PASSED SPANISH 115 WILL HAVE PRIORITY, BUT THE COURSE MAY BE TAKEN BY ANYONE. FURTHER DEVELOPMENT OF SPANISH 115 IF THERE IS ROOM<br>PREREQUISITE: SPANISH OR EQUIVALENT.<br>4 LECT HOURS<br>STAFF                                           | 4 CREDITS |
| SPAN | 221 | THE HISPANIC CHARACTER AS PORTRAYED IN LITERATURE<br>READING IN SPANISH AND SPANISH AMERICAN LITERATURE ILLUSTRATING THE HISPANIC CHARACTER AND ITS INTERACTION WITH INDIGENOUS OR CREOLE CULTURES OF SPANISH AMERICA. A THIRD-YEAR COURSE FOR NON-MAJORS NOT INTERESTED IN ADVANCED CONVERSATION.<br>PREREQUISITE: INTERMEDIATE SPANISH OR EQUIVALENT<br>3 LECT HRS<br>STAFF                                | 3 CREDITS |
| SPAN | 222 | THE HISPANIC CHARACTER AS PORTRAYED IN LITERATURE<br>A CONTINUATION OF SPANISH 221. READINGS IN SPANISH AND SPANISH AMERICAN LITERATURE ILLUSTRATING THE SPANISH CHARACTER AND ITS INTERACTION WITH INDIGENOUS OR CREOLE CULTURES OF SPANISH AMERICA. A THIRD-YEAR COURSE FOR NON-MAJORS NOT INTERESTED IN ADVANCED CONVERSATION.<br>PREREQUISITE: INTERMEDIATE SPANISH OR EQUIVALENT<br>3 LECT HRS<br>STAFF | 3 CREDITS |
| SPAN | 231 | INTRODUCTION TO SPANISH CULTURE<br>SELECTED READINGS IN THE CULTURE OF SPAIN--HISTORY GEOGRAPHY, ART, FOLKLORE, DISCUSSIONS AND PAPERS BASED ON THE READINGS.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                         | 3 CREDITS |
| SPAN | 232 | INTRODUCTION TO SPANISH-AMERICAN CULTURE<br>SELECTED READINGS IN THE CULTURE OF SPANISH AMERICA--HISTORY, GEOGRAPHY, ART, FOLKLORE, DISCUSSIONS AND PAPERS BASED ON THE READINGS.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                     | 3 CREDITS |
| SPAN | 256 | MODERN SPANISH-AMERICAN LITERATURE IN TRANSLATION.<br>WORKS OF SOME OF THE OUTSTANDING SPANISH-AMERICAN WRITERS OF THE 19TH AND OF THE 20TH CENTURY. NO KNOWLEDGE OF SPANISH REQUIRED.<br>FULFILLS A REQUIREMENT FOR LATIN-AMERICAN CONCENTRATION.<br>PREREQUISITE: 1 SOPH ENGLISH COURSE OR PERMISSION OF INSTRUCTOR.<br>3 LECT HRS<br>STAFF                                                                | 3 CREDITS |

SPAN 303 ADVANCED SPANISH COMPOSITION AND CONVERSATION  
INTENSIVE WORK IN WRITTEN AND ORAL SPANISH.  
WEEKLY THEMES AND FREQUENT ORAL REPORTS.  
PREREQUISITE: INTERMEDIATE SPANISH OR EQUIVALENT  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 304 ADVANCED SPANISH COMPOSITION AND CONVERSATION  
INTENSIVE WORK IN WRITTEN AND ORAL SPANISH.  
WEEKLY THEMES AND FREQUENT ORAL REPORTS.  
3 LECT HOURS  
STAFF  
3 CREDITS

SPAN 307 LANGUAGE ARTS  
INTRODUCTION TO APPLIED LINGUISTICS AND DETAILED STUDY OF SPANISH  
PHONOLOGY, MORPHOLOGY AND SYNTAX. SPECIAL ATTENTION TO THE MECHANISMS  
OF INTERFERENCE IN ENGLISH-SPEAKING LEARNERS OF SPANISH.  
PREREQUISITE: INTERMEDIATE SPANISH OR EQUIVALENT  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 308 LITERARY ARTS  
INTRODUCTION TO LITERARY STUDIES. TEXTUAL ANALYSIS OF REPRESENTATIVE  
SELECTIONS FROM MAJOR LITERARY MOVEMENTS AND PERIODS, USING THE  
TERMINOLOGY OF LITERARY CRITICISM AND THE PERSPECTIVES OF LITERARY  
HISTORY. PRACTICE IN LITERARY ANALYSIS.  
PREREQUISITE: INTERMEDIATE SPANISH OR EQUIVALENT  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 313 ADVANCED SPANISH GRAMMAR  
AN INTENSIVE STUDY OF SPANISH GRAMMAR. EMPHASIS ON WRITTEN EXERCISES,  
THEMES, AND PAPERS.  
PREREQUISITE: INTERMEDIATE SPANISH OR EQUIVALENT  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 321 SPANISH CIVILIZATION  
STUDIES IN SPANISH HISTORY, THOUGHT AND THE ARTS AS A BACKGROUND FOR  
LITERATURE.  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 322 SPANISH-AMERICAN CIVILIZATION  
MAJOR ASPECTS OF THE CULTURAL  
EVOLUTION OF THE  
SPANISH-AMERICAN COUNTRIES FROM PRE-HISPANIC  
DAYS TO PRESENT.  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 331 SURVEY OF SPANISH LITERATURE  
LITERARY EVOLUTION OF SPAIN SINCE THE MIDDLE AGES TO THE GOLDEN AGE.  
INTRODUCTION TO MAIN GENRES AND WORKS. WRITTEN AND ORAL REPORTS  
REQUIRED.  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 332 SURVEY OF SPANISH LITERATURE  
LITERARY EVOLUTION OF SPAIN SINCE THE GOLDEN AGE TO THE PRESENT.  
INTRODUCTION TO MAIN GENRES AND WORKS. WRITTEN AND ORAL REPORTS  
REQUIRED.  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 338 SURVEY OF SPANISH-AMERICAN LITERATURE  
LITERATURE OF SPANISH-AMERICA FROM THE COLONIAL PERIOD TO THE 19TH  
CENTURY. A STUDY OF THE MAIN WORKS AGAINST THE BACKGROUND OF HIS-  
TORICAL EVENTS. SOCIAL PRESSURES AND EUROPEAN LITERARY MOVEMENTS.  
FULFILLS A REQUIREMENT FOR LATIN-AMERICAN CONCENTRATION.  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 339 SURVEY OF SPANISH-AMERICAN LITERATURE  
LITERATURE OF SPANISH AMERICA FROM THE 19TH CENTURY TO THE PRESENT.  
A STUDY OF THE MAIN WORKS AGAINST THE BACKGROUND OF HISTORICAL  
EVENTS, SOCIAL PRESSURES AND EUROPEAN LITERARY MOVEMENTS.  
FULFILLS A REQUIREMENT FOR LATIN-AMERICAN CONCENTRATION.  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 350 MEDIEVAL CULTURE  
AN INTRODUCTION TO THE SPANISH MEDIEVAL CULTURE FROM THE GERMANIC  
INVASIONS TO THE RENAISSANCE. A STUDY OF CHRISTIAN, MOORISH AND  
JEWISH INTERRELATIONSHIPS THROUGH THE LITERARY TEXTS. EVERYDAY LIFE  
AND ARTISTIC EXPRESSIONS. THE IMPORTANCE OF THE MEDIEVAL LEGACY TO  
SPAIN AND SPANISH AMERICA. INTRODUCTION IN SPANISH. READING  
KNOWLEDGE OF SPANISH REQUIRED.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 351 SPANISH LITERATURE BEFORE 1500  
READINGS FROM EL CID THROUGH THE CELESTINA, INCLUDING SUCH WORKS AS  
LIRRO DE RUEN AMOR, EL CONDE LUCANOR, ROMANCES, AND THE POETRY OF  
JORGE MANRIQUE - AND OTHERS.  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 363 HISPANIC MASTERPIECES IN TRANSLATION  
MAJOR LITERARY WORKS OF SPAIN AND SPANISH AMERICA. NO KNOWLEDGE  
OF SPANISH REQUIRED. NO SPANISH MAJOR CREDIT.  
THIS COURSE MEETS THE 2ND YR UNIVERSITY LANGUAGE REQUIREMENT.  
FULFILLS A REQUIREMENT FOR LATIN-AMERICAN CONCENTRATION.  
3 LECT HRS  
STAFF  
4 CREDITS

SPAN 364 HISPANIC MASTERPIECES IN TRANSLATION  
A CONTINUATION OF SPANISH 263. MAJOR LITERARY WORKS OF SPAIN AND  
SPANISH AMERICA. NO KNOWLEDGE OF SPANISH REQUIRED. NO SPANISH  
MAJOR CREDIT. THIS COURSE MEETS THE 2ND YEAR UNIVERSITY LANGUAGE  
REQUIREMENT. FULFILLS A REQUIREMENT FOR LATIN-AMERICAN CONCENTRATION.  
3 LECT HRS  
STAFF  
4 CREDITS

SPAN 371 POETRY OF THE GOLDEN AGE  
SELECTIONS FROM GARCILASO, HERRERA, FRAY LUIS DE LEON, SAN JUAN DE  
LA CRUZ, LOPE DE VEGA, GONGORA, QUEVEDO.  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 373 GOLDEN AGE NOVEL  
SELECTIONS FROM VARIOUS FORMS OF SPANISH NOVEL SUCH AS RICARESQUE,  
PASTORAL AND MOORISH.  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 375 GOLDEN AGE THEATRE  
OUTSTANDING DRAMATISTS OF THE 16TH AND 17TH CENTURIES. LOPE DE VEGA,  
MIRA DE AMUESCA, TINISO DE MOLINA, RUIZ DE ALARCON, CALDERON DE LA  
BARCA.  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 381 EARLY NON-FICTIONAL PROSE OF SPAIN  
IMPORTANT WORKS OF THE MORALISTS, MYSTICS AND SATIRISTS OF 16TH AND  
17TH CENTURY SPAIN.  
3 LECT HOURS  
STAFF  
3 CREDITS



- SPAN 393 WOMEN IN SPANISH LITERATURE  
THE CHANGING IMAGE OF WOMEN THROUGHOUT THE CENTURIES.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 393 SPANISH AMERICAN COLONIAL LITERATURE  
A SURVEY OF THE LITERATURE OF THE SPANISH COLONIES, FOCUSING ON ITS  
OUTSTANDING FIGURES--INCA GARCILASO, JUANA INES DE LA CRUZ--AS WELL  
AS THE LITERATURE OF THE INDEPENDENCE MOVEMENT.  
FULFILLS A REQUIREMENT FOR LATIN-AMERICAN CONCENTRATION.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 395 SPANISH ROMANTICISM  
A STUDY OF SPANISH LITERATURE FROM 1814 TO 1850, CONCENTRATION ON  
LARRA, ESPRONCEDA, ZORILLA, RIVAS AND REQUER.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 397 SPANISH REALISM  
A STUDY OF SPANISH LITERATURE FROM 1850 TO 1898. SPECIAL ATTENTION  
TO PEREZ GALDOS, VALERA AND CLARIN.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 402 CERVANTES  
AN INTENSIVE STUDY OF THE WORKS OF CERVANTES  
WITH THE EXCLUSION OF DON QUIXOTE  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 403 DON QUIXOTE  
A CRITICAL ANALYSIS OF SPAIN'S GREATEST MASTERPIECE.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 407 THE GENERATION OF 1898  
FIRST SEMESTER--CANIVET, UNAMUNO, VALLE-INCLAN, BARROJA.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 408 THE GENERATION OF 1898  
SECOND SEMESTER--AZORIN, MACHADO,  
MIRO, PEREZ DE AYALA, ORTEGA.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 410 GALDOS  
SELECTED WORKS OF A MAJOR MODERN NOVELIST.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 412 19TH CENTURY SPANISH AMERICAN LITERATURE  
A STUDY OF THE ROMANTIC AND REALISTIC LITERATURE IN SPANISH AMERICA  
WITH EMPHASIS ON THE GAUCMO LITERATURE.  
FULFILLS A REQUIREMENT FOR LATIN-AMERICAN CONCENTRATION.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 431 20TH CENTURY SPANISH FICTION.  
SELECTED READINGS FROM THE MAJOR NOVELISTS AND SHORT STORY WRITERS OF  
THE 20TH CENTURY AFTER THE GENERATION OF 98.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 433 20TH CENTURY SPANISH POETRY  
SELECTED READINGS FROM JUAN RAMON JIMENEZ, THE POETS OF THE GENERA-  
TION OF 1927, AND THE POST WAR GENERATION.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 436 20TH CENTURY SPANISH THEATRE  
SELECTED READINGS OF THE MAJOR DRAMATISTS OF THE 20TH CENTURY AFTER  
THE GENERATION OF 98.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 439 TWENTIETH CENTURY SPANISH ESSAY  
SPANISH PHILOSOPHIC, HISTORIC AND LITERARY ESSAY AFTER THE GENERATION  
OF 98. A STUDY OF SUCH WRITERS AS ORTEGA Y GASSET, MENENDEZ PIDAL  
MARANON, CASTRO.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 450 MODERNISM  
THE SPANISH AMERICAN MODERNIST MOVEMENT WITH ATTENTION TO POETRY  
AND PROSE, MARTI, GARCIA, LUGONES, LARRETA.  
FULFILLS A REQUIREMENT FOR LATIN-AMERICAN CONCENTRATION.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 451 RUHEN DARIO  
A STUDY OF A MAJOR SPANISH-AMERICAN POET AND HIS INFLUENCE IN  
THE HISPANIC WORLD.  
FULFILLS A REQUIREMENT FOR LATIN-AMERICAN CONCENTRATION.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 453 MODERN SPANISH-AMERICAN NOVEL  
DEVELOPMENT OF THE MODERN SPANISH-AMERICAN NOVEL DURING THE POST-  
MODERNISM PERIOD WITH SPECIAL ATTENTION TO THE NOVEL OF THE MEXICAN  
REVOLUTION AND THE CRIOLLOSTA NOVEL. AUTHORS SUCH AS AZUFLA, GALLEGOS  
RIVERA ARE STUDIED.  
FULFILLS A REQUIREMENT FOR LATIN-AMERICAN CONCENTRATION.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 454 MODERN SPANISH-AMERICAN NOVEL  
DEVELOPMENT OF THE MODERN SPANISH-AMERICAN NOVEL SINCE THE VANGUARD  
MOVEMENT TO PRESENT. A STUDY OF BORGES, AUSTRILIAS, SARATO, CORTAZAR,  
GARCIA MARQUEZ AND OTHERS.  
FULFILLS A REQUIREMENT FOR LATIN-AMERICAN CONCENTRATION.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 456 CONTEMPORARY SPANISH-AMERICAN POETRY  
SELECTIONS OF SPANISH AMERICAN POETRY FROM MODERNISM TO THE PRESENT.  
MISTRAL, NEQUEDA, NEGRO POETRY, PAZ.  
FULFILLS A REQUIREMENT FOR LATIN-AMERICAN CONCENTRATION.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 459 SPANISH-AMERICAN ESSAY  
SELECTED READINGS FROM THE WORKS OF THE MAJOR ESSAYISTS OF THE 19TH  
AND 20TH CENTURIES.  
FULFILLS A REQUIREMENT FOR LATIN-AMERICAN CONCENTRATION.  
3 LECT HRS  
STAFF  
3 CREDITS
- SPAN 461 THE POST CIVIL WAR SPANISH NOVEL  
THE IMPACT OF THE SPANISH CIVIL WAR OF 1936 IN THE NOVEL. THE POST-  
WAR NOVELISTS IN SPAIN AND IN EXILE. SENDOR, AYALA, INAKAIB, CELA  
LAFORET, DELIBRES, MAT TE, LUIS MARTIN SANTOS, GOYTISOLO.  
3 LECT HRS  
STAFF  
3 CREDITS

SPAN 47R INDEPENDENT STUDY  
479 INTENDED FOR STUDENTS WHO WANT TO WRITE AN HONORS THESIS OR TO STUDY A SUBJECT WITH SPECIAL EMPHASIS. IT CAN BE TAKEN ONLY ONCE.  
PREREQUISITE: PERMISSION OF INSTRUCTOR AND DEPARTMENT CHAIRPERSON  
3 LECT HRS  
3 CREDITS

SPAN 480 STUDIES IN HISPANIC LITERATURE  
SPECIAL TOPICS OR INDIVIDUAL AUTHORS. TOPICS VARY FROM YEAR TO YEAR.  
3 LECT HRS  
3 CREDITS

SPAN 485 SENIOR SEMINAR  
GUIDED RESEARCH PROJECTS IN SPANISH OR SPANISH-AMERICAN LITERATURE.  
RECOMMENDED FOR LANGUAGE MAJORS WHO PLAN TO DO GRADUATE WORK, AND FOR THOSE WHO PLAN TO WRITE AN HONOR THESIS. REQUIRED OF LITERATURE MAJORS.  
PREREQUISITE: SENIOR STANDING OR PERMISSION OF THE DEPARTMENT.  
3 LECT HRS  
3 CREDITS

SPAN 499 HONORS THESIS  
A PAPER WRITTEN IN CONJUNCTION WITH THE SENIOR SEMINAR, AND SUPERVISED BY A MEMBER OF THE SPANISH DEPARTMENT OF COLLEGE II.  
COLLEGE I MAJORS, WITH PERMISSION, MAY WRITE AN HONORS THESIS UNDER THE SUPERVISION OF A MEMBER OF THE DEPARTMENT.  
PREREQUISITE: SENIOR SEMINAR  
3 LECT HRS  
3 CREDITS

SPAN 58A METHODS AND PRACTICE TEACHING OF SPANISH IN SECONDARY SCHOOLS  
THE ISSUES, PRINCIPLES AND METHODS OF SECONDARY SCHOOL SPANISH TEACHING. SUPERVISION AND CRITIQUE OF PRACTICE TEACHING--- 3 CREDITS  
TOWARD SPANISH MAJOR.  
PREREQUISITE: 6 HOURS OF EDUCATION COURSES AND ADMISSION TO TEACHER CERTIFICATION PROGRAM  
3 LECT HRS, 20 LAB HRS - PRACTICE TEACHING  
STAFF  
9 CREDITS

SPAN 58A CURRICULUM AND METHODS STUDENT TEACHING-SPANISH  
PREREQUISITE: 6 HOURS EDUCATION COURSES AND ADMISSION TO THE TEACHER CERTIFICATION PROGRAM  
3 LECT HRS, 20 LAB HRS (PRACTICE TEACHING)  
STAFF  
9 CREDITS

TEACHER CERTIFICATION PROGRAM

TCHCFW 211 THE LIBRARY AND THE CITY CHILD  
THIS COURSE IS DESIGNED TO EXPLORE THE SCHOOL AND PUBLIC LIBRARY'S ROLE IN MEETING THE NEEDS OF CITY CHILDREN AND YOUNG ADULTS. IT CONCENTRATES ON CREATING A VIABLE RESPONSE TO THOSE NEEDS AND DETERMINING THE SPECIAL CHARACTERISTICS OF THE KIND OF LIBRARY THAT WILL BE ABLE TO MEET THEM. FIELD-WORK IS REQUIRED.  
3 LECT HRS  
MS. ARON, MS. KAUFMAN  
3 CREDITS

TCHCFW 212 BOOKS AND THE CITY CHILD  
A CONTINUATION OF TCH 211 THIS COURSE CONCENTRATES ON AN EXAMINATION OF CHILDREN'S LITERATURE AS A REFLECTION OF THE WORLD OF THE CITY CHILD, AS A MEANS OF EXPANDING THAT WORLD AND MAKING IT MORE COMPREHENSIBLE. FIELD-WORK IS REQUIRED.  
3 LECT HRS  
MS. ARON, MS. KAUFMAN  
3 CREDITS

TCHCFW 589 ISSUES IN ELEMENTARY SCHOOL CURRICULUM  
THE COURSE SURVEYS THE GOALS, STRUCTURES, LEARNING THEORIES AND PHILOSOPHIES IN ELEMENTARY EDUCATION, WITHIN THAT FRAMEWORK, IT FOCUSES ON INSTRUCTION IN THE LANGUAGE ARTS, READING AND MATH, CONCENTRATING ON SPECIFIC CURRICULUM, METHODS AND MATERIALS OF THOSE

SUBJECTS. IN-SCHOOL FIELDWORK: 4 HRS/WEEK, - 15 WEEKS.  
PREREQUISITE: ACCEPTANCE TO TCP  
3 LECT HRS  
MS. GALLO  
3 CREDITS

TCHCFW 590 PRACTICE TEACHING IN ELEMENTARY SCHOOL  
THE COURSE HAS AN INTERDISCIPLINARY FOCUS ON THE TEACHING OF SCIENCE, SOCIAL SCIENCE, MUSIC AND ART, CONCENTRATING ON SPECIFIC CURRICULUM, METHODS AND MATERIALS OF THOSE SUBJECTS. IN-SCHOOL FIELDWORK: 1/2 DAYS OF FULL-TIME, SUPERVISED STUDENT TEACHING/WEEK --15 WEEKS  
PREREQUISITE: ACCEPTANCE TO TCP  
3 LECT HRS, 20 HRS PRACTICE TEACHING  
MS. GALLO  
3 CREDITS

THEATRE ARTS

GRADUATION REQUIREMENTS

Courses in the Theatre Arts are offered at three levels: Introductory, Intermediate, and Advanced. Introductory courses require no prerequisites and are directed to the student body as a whole. Intermediate courses are workshops, course in drama taught by other departments of the University, and introductions to special areas of inquiry intended to provide basic knowledge of the field. Advanced courses are given in the more specialized areas of Theatre Arts.

Summary of requirements for majors: TH 111, TH 123, TH 235, TH 236; four courses offered by other departments in Drama; two Workshops, two Advanced courses.

THARP 111 TRADITIONS OF WESTERN DRAMA

THE INTENTS, DESIGNS, AND TECHNIQUES OF THE DRAMA OF THE WESTERN WORLD. FROM THE CLASSIC GREEK TO THE CONTEMPORARY EUROPEAN AND AMERICAN THEATRE. EMPHASIS ON THE CULTURAL ENVIRONMENT OF EACH OF THE MAJOR PERIODS AND LOCALES OF THE DRAMA AND THE RELATION OF THE THEATRE TO ITS PUBLIC.  
3 LECT HRS  
MR. ROBERTS, MR. EVANS  
4 CREDITS

THARP 121 THE STYLES AND TECHNIQUES OF COMEDY

THE COMIC FORM, EMPHASIZING DIFFERING STYLES, TECHNIQUES, MOTIVATIONS, AND THEATRE ARCHITECTURE.  
3 LECT HRS  
MR. ROBERTS, MR. EVANS  
4 CREDITS

THARP 122 THE STYLES AND TECHNIQUES OF TRAGEDY

THE EVOLUTION OF THE TRAGIC FORM, EMPHASIZING DIFFERING STYLES, TECHNIQUES, MOTIVATIONS AND DEGREES OF EFFECTIVENESS OF VARIOUS EXEMPLARY TRAGIC PLAYWRIGHTS, ESPECIALLY IN RELATION TO THEIR AUDIENCE, ACTORS, AND THEATRE ARCHITECTURE.  
3 LECT HRS  
MR. ROBERTS, MR. EVANS  
4 CREDITS

THARP 123 STAGECRAFT I

AN INTRODUCTION TO AND EXPLORATION OF STAGE FACILITIES AND SKILLS EMPHASIZING SKILL DEVELOPMENT IN THE USE AND CHOICE OF TOOLS, MATERIALS AND PROCEDURES NECESSARY IN SCENIC AND PROPERTY EXECUTION. INCLUDES LAB WORK IN DEPARTMENT PRODUCTION.  
3 LECT HRS  
MS. VAN VOORHIS  
3 CREDITS

THARP 125 SPEECH AND MOVEMENT

BASICS OF VOICE TRAINING, DICTION IMPROVEMENT, DIAPHRAGMATIC BREATHING, MOVEMENT WORK FOR THE STAGE USING TAI CHI, YOGA, CHARACTERIZATION MOVEMENT, MOVEMENT TO DEVELOP STAGE PRESENCE, THE KEEPING OF A JOURNAL BY EACH STUDENT.  
3 LECT HRS  
MS. LINOWEIM  
3 CREDITS

- THRAPT 126 SPEECH AND ORAL INTERPRETATION  
STUDY OF PRINCIPLES OF SPEECH AND ORAL INTERPRETATION EMPHASIZING ANALYSIS, PREPARATION AND PRESENTATION OF LITERARY MATERIAL BEFORE AN AUDIENCE.  
PREREQUISITE: SPEECH AND MOVEMENT, THRAPT 125 AND PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. LINDHEIM  
3 CREDITS
- THRAPT 212 THEATRE OF SOCIAL PROTEST  
AN HISTORICAL SURVEY OF THE USE OF THE THEATRE TO CHALLENGE THE VALUES OF SOCIETY. THE TECHNIQUES OF STAGECRAFT USED IN DIFFERENT PERIODS TO REVEAL CONFLICT IN SOCIETY, DRAMATIZE CONTEMPORARY ISSUES, AND INFLUENCE PUBLIC OPINION.  
3 LECT HRS  
MR. ROBERTS  
3 CREDITS
- THRAPT 213 AMERICAN THEATRE BEFORE O'NEILL  
A SURVEY OF AMERICAN DRAMA FROM BEFORE THE REVOLUTION UNTIL THE ADVENT OF O'NEILL ON BROADWAY IN 1920. EMPHASIS WILL BE PLACED UPON THE RELATION OF INDIVIDUAL PLAYS TO AMERICAN THEATRICAL, POLITICAL, AND SOCIAL HISTORY.  
3 LECT HRS  
MR. EVANS, MR. ROBERTS  
3 CREDITS
- THRAPT 214 AMERICAN THEATRE SINCE O'NEILL  
THE RISE AND DECLINE OF THE GREAT PERIOD IN AMERICAN PLAYWRITING AND PRODUCTION. EMPHASIS ON THE BROADWAY THEATRE AS A MIRROR-IMAGE OF THE IDEAS AND EVENTS OF AMERICAN CONTEMPORARY HISTORY SINCE WORLD WAR I.  
3 LECT HRS  
MR. EVANS, MR. ROBERTS  
3 CREDITS
- THRAPT 215 MID-TWENTIETH CENTURY DRAMA  
THE IDEAS, VALUES, AND TECHNIQUE OF THE CONTEMPORARY THEATRE AS REFLECTED IN STAGE PRODUCTION.  
3 LECT HRS  
MR. ROBERTS  
3 CREDITS
- THRAPT 216 ELIZABETHAN STAGE  
STUDY OF ELIZABETHAN STAGE TECHNIQUES AS REVEALED IN PLAYS BY MARLOWE, SHAKESPEARE, JONSON, WEBSTER.  
PREREQUISITE: PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. EVANS  
3 CREDITS
- THRAPT 220 BLACK THEATRE IN AMERICA  
AN EXPLORATION OF THE RICH AND COMPLEX HISTORY OF BLACK THEATRE FROM ITS BEGINNINGS TO THE PRESENT, AS RELATED TO AND REFLECTIVE OF AMERICAN SOCIETY. AN EXTENSION OF HISTORICAL UNDERSTANDING OF THE RELATION OF THEATRE TO SOCIETY, AND A STUDY OF AN ARTISTIC TRADITION GREATLY INFLUENCING AMERICAN THEATRE PRACTICES.  
3 LECT HRS  
MR. OWENS  
3 CREDITS
- THRAPT 223 STAGECRAFT II  
A STUDY OF THE TOOLS, EQUIPMENT AND PROCEDURES NECESSARY IN THEATRICAL GRAPHICS, LIGHTING AND SOUND PRODUCTION. INCLUDES LAB WORK IN DEPARTMENT PRODUCTION AND INDIVIDUAL PROJECTS.  
PREREQUISITE: STAGECRAFT I  
3 LECT HRS  
MS. VAN VOORHIS  
3 CREDITS
- THRAPT 224 PLAY PRODUCTION I  
A STUDY OF THE PROCESS OF PRODUCING A THEATRICAL EVENT EMPHASIZING THE SELECTING AND TRAINING OF THE PRODUCTION STAFF, BUDGETING AND PROMOTION. LAB WORK INCLUDES SUPERVISORY ROLE IN DEPARTMENT PRODUCTION.  
3 LECT HRS  
MS. VAN VOORHIS  
3 CREDITS
- THRAPT 225 PLAY PRODUCTION II  
FURTHER EXPLORATION OF PRODUCING THEATRE, MOST ESPECIALLY FOR THE ORGANIZATION OF PERSONNEL AND FACILITIES FOR TOURING AND REPERTORY.  
PREREQUISITE: STAGECRAFT I OR PLAY PRODUCTION I  
3 LECT HRS  
MS. VAN VOORHIS  
3 CREDITS
- THRAPT 230 WORKSHOP IN DRAMA  
A COURSE DESIGNED TO STUDY THE CONNECTION BETWEEN THE TEXT AND THE PERFORMANCE OF A PLAY. SOME ATTENTION IS GIVEN ALSO TO THE PLAY-WRIGHT, HIS TIME, AND TO PRODUCTION HISTORY. WRITTEN WORK MAY INCLUDE A DIRECTOR'S NOTEBOOK AND PROGRAM NOTES. STUDENTS WILL PARTICIPATE IN ONE OR MORE FULLY-MOUNTED PRODUCTIONS AND PRESENTED TO THE UNIVERSITY COMMUNITY FREE OF CHARGE.  
3 LECT HRS, 3 LAB HRS  
MR. ROBERTS, MR. EVANS  
4 CREDITS
- THRAPT 232 MODERN DANCE THEATRE WORKSHOP  
DIFFERENT COLORS, TEXTURES, RHYTHMS AND IMAGES CAN BE EXPRESSED IN BODY MOVEMENT. THIS WORKSHOP WILL USE AFRICAN, JAZZ, BLUES, MODERN DANCE, TAI CHI, YOGA AND IMPROVISATION. THE FINAL PROJECT WILL BE A MOVEMENT DANCE THEATRE PIECE INCORPORATING ALL THE TECHNIQUES EXPERIENCED IN THE CLASS.  
6 LECT HRS  
MS. LINDHEIM  
4 CREDITS
- THRAPT 234 NEW THEATRE STRATEGIES  
WORKS IN A NEW DIRECTION IN THEATRE, SUCH AS THE EVOLUTION OF A THEATRE PIECE FROM A THEME OR GROUP OF THEMES RATHER THAN A SCRIPT. STUDENTS WILL BE INVOLVED IN ALL AREAS OF THE COLLECTIVE PROCESS OF FORMULATING DRAMA FROM THE INTERACTION OF A GROUP, STRUCTURED AND DIRECTED BY THE INSTRUCTOR.  
2 LECT HRS, 2 LAB HRS  
STAFF  
3 CREDITS
- THRAPT 235 INTRODUCTION TO DIRECTING I  
DIRECTOR AS CREATOR OF VISION OF WHOLE PLAY AND ALL ITS ELEMENTS. ACTING, LIGHTING, STAGE DESIGN, STYLES OF THEATRE, SCRIPT BREAKDOWN, PRODUCTION NOTEBOOK. SLOW CAREFUL WORK IN DIRECTING SMALL SCENES.  
3 LECT HRS  
STAFF  
3 CREDITS
- THRAPT 236 INTRODUCTION TO ACTING I  
DRAMATIC FORM REQUIRED IN ACTING. A SURVEY OF VARIOUS STYLES -GREEK, ELIZABETHAN, RESTORATION AND MODERN- AND THE ACTOR'S FUNCTION. EMPHASIS ON RECENTLY EVOLVED METHODS OF ACTING, AND ON PREPARATION OF SCENES IN CLASS.  
PREREQUISITE: PERMISSION OF INSTRUCTOR.  
3 LECT HRS  
STAFF  
3 CREDITS
- THRAPT 240 WOMEN IN THEATRE  
PLAYS BY AND ABOUT WOMEN. HISTORY OF WOMEN IN THEATRE, VISITS WITH WOMEN EMPLOYED IN THEATRE.  
3 LECT HRS  
STAFF  
3 CREDITS
- THRAPT 251 PLAYWRITING I  
WRITING FOR THE THEATRE. INCLUDING EXAMINATION OF MODEL ONE-ACT AND THREE-ACT PLAYS BY MAJOR CONTEMPORARY WRITERS. SELECTED READINGS ON THE CRAFT OF PLAYWRITING, AND COMPLETION OF AN ORIGINAL PLAY REGUN IN CLASS.  
3 LECT HRS  
MR. OWENS, MR. ROBERTS  
3 CREDITS



THPART 261 INTRODUCTION TO COSTUME DESIGN  
IN THE THEATRE INCORPORATING HISTORY OF FASHION, COSTUME DESIGN,  
THEORETICAL APPROACH TO DESIGNING COSTUMES FOR THE THEATRE AND FILM,  
INTRODUCTION TO THE USES OF COLOR, SCALE, GENERAL DESIGN ELEMENTS AS  
APPLICABLE TO STAGE COSTUMING, THE QUALITIES OF FABRIC, BASIC  
CUTTING AND DRAPING IN STAGE COSTUMES.  
3 LECT HRS  
MR. ROBERTS  
3 CREDITS

THPART 300 SEMINAR IN THE SCENIC IMAGINATION  
THE CREATIVE PRINCIPLES OF STAGE PRODUCTION, BASED ON AN ANALYSIS OF  
THE PLAYSCRIPT IN ITS RELATION TO THE STAGE ACTION, SETTING,  
COSTUMES AND LIGHTING. STUDY OF SCENIC METAPHOR AND A REVIEW OF THE  
HISTORIC FORMS OF STAGING, WITH EMPHASIS ON THE MODERN STYLES FROM  
NATURALISM TO ABSTRACTISM AND EPIC THEATRE.  
PREREQUISITE: PERMISSION OF INSTRUCTOR.  
3 LECT HRS  
STAFF  
3 CREDITS

THPART 301 SEMINAR IN CONTEMPORARY AMERICAN PLAYWRIGHTS  
ANALYSIS OF THE ART OF A MAJOR LIVING WRITER OF THE AMERICAN STAGE  
THE HISTORY OF HIS PLAYS AND THEIR PRODUCTION CRITICAL RESPONSE  
CONTRIBUTION OF HIS DRAMA TO THE AMERICAN THEATRE AND SOCIETY. IN  
MOST CASES STUDENTS WILL CONSULT WITH THE PLAYWRIGHT AND/OR THOSE  
WHO HAVE WORKED WITH HIM.  
3 LECT HRS  
MR. ROBERTS  
3 CREDITS

THPART 335 INTRODUCTION TO DIRECTING II  
ADVANCED WORK IN DIRECTING, INCLUDING THE MOUNTING OF SCENES AND  
ONE-ACT PLAYS.  
PREREQUISITE: INTRODUCTION TO DIRECTING I  
3 LECT HRS  
STAFF  
3 CREDITS

THPART 376 INTRODUCTION TO ACTING II  
ADVANCED WORK IN ACTING, INCLUDING THE MOUNTING OF SCENES AND ONE-  
ACT PLAYS.  
PREREQUISITE: INTRODUCTION TO ACTING I  
3 LECT HRS  
STAFF  
3 CREDITS

THPART 351 PLAYWRITING II  
WRITING FOR THE THEATRE, WITH EMPHASIS ON THE THREE-ACT FORM,  
INCLUDING THE CONSTRUCTION OF A SCENARIO AND COMPLETION OF A DRAFT  
OF AN ORIGINAL THREE-ACT PLAY.  
PREREQUISITE: PLAYWRITING I  
3 LECT HRS  
MR. OWENS  
3 CREDITS

THPART 360 DESIGN II  
ADVANCED TECHNIQUES IN THE SCENE SKETCH, MODELS FOR SCENERY, INTER-  
PRETATIONS OF THE OFFERING STYLES REQUIRED FOR PLAYS, OPERA, BALLET,  
MUSICAL COMEDY, ETC. SKETCHES, GROUND PLANS, AND ONE MAJOR DESIGN  
PROJECT TO BE EXECUTED DURING THE TERM.  
PREREQUISITE: DESIGN, OR PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MR. ROBERTS  
3 CREDITS

THPART 404 ADVANCED DIRECTING  
ADVANCED WORK ON SPECIAL PROJECTS AS A WHOLE CLASS IN LABORATORY  
SITUATION, MOUNTING OF SMALL SCENES AND PLAYS.  
PREREQUISITE: DIRECTING I AND II, PERMISSION OF INSTRUCTOR  
3 LECT HRS  
MS. AUSUBEL  
3 CREDITS

THPART 435 THEATRE ARTS INTERNSHIP PROGRAM  
DESIGNED TO ENABLE THEATRE ARTS MAJORS WITH SUFFICIENT COURSE  
WORK BEHIND THEM TO EARN 6 CREDITS FOR A SEMESTER'S INTERNSHIP  
WITH A WORKING THEATRE OR THEATRE PROGRAM IN A COMMUNITY COLLEGE.

PREREQUISITE: TA MAJOR, JR AND SR, ONLY, PERMISSION OF INSTRUCTOR  
6 CREDITS  
HRS BY ARRANGEMENT  
MR. EVANS

THPART 436 ADVANCED ACTING  
ADVANCED WORK ON SELECTED PROJECTS. SPECIAL ATTENTION TO  
INDIVIDUAL ACTOR'S NEEDS, SCENE WORK SCRIPT BREAKDOWN AND  
DEVELOPMENT OF A CHARACTER FOR A WHOLE PLAY.  
PREREQUISITE: ACTING I & II  
4 HRS  
STAFF  
3 CREDITS

THPART 478 INDEPENDENT STUDY  
OPEN ONLY TO A VERY LIMITED NUMBER OF STUDENTS IN ANY ONE SEMESTER:  
RESEARCH, STUDY, AND PARTICIPATION IN THEATRE PROJECTS OUT-  
SIDE THE CLASSROOM IN CONSULTATION WITH A FACULTY ADVISER. A  
WRITTEN PROPOSAL IS REQUIRED OF APPLICANTS.  
PREREQUISITE: PERMISSION OF INSTRUCTOR AND DEPARTMENT CHAIR-  
PERSON  
HRS BY ARRANGEMENT  
STAFF  
1-3 CREDITS

THPART 491 SELECTED TOPICS  
STUDY OF DIFFERENT AREAS OF THEATRE ARTS PREPARATION, COURSE CONTENT  
WILL VARY EACH SEMESTER AND WILL BE ANNOUNCED DURING PRE-REGISTRATION  
PERIODS.  
PREREQUISITE: SOPHOMORE STANDING  
3 LECT HRS  
STAFF  
3 CREDITS

THPART 586 SEMINAR - TEACHING OF DRAMA  
PREREQUISITE: ADMISSION TO TEACHER'S CERTIFICATION  
PROGRAM AND PERMISSION OF INSTRUCTOR  
MR. ROBERTS  
3-9 CREDITS

WOMEN'S STUDIES

WOST 100 WOMEN AND SOCIETY, AN INTRODUCTION TO WOMEN'S STUDIES  
AN INTERMEDIATE, INTERDISCIPLINARY COURSE RECOMMENDED AS A FIRST  
COURSE IN WOMEN'S STUDIES. THROUGH LECTURES, READINGS, AND  
DISCUSSIONS, STUDENTS WILL EXAMINE THE ORIGINS OF WOMEN'S  
OPPRESSION, FEMALE AND MALE SEX ROLES, MARRIAGE AND THE FAMILY  
WOMEN WORKERS AT HOME AND IN THE LABOR FORCE. STUDENTS WILL RELATE  
COURSE MATERIAL TO EXPERIENCES IN THEIR OWN LIVES. FIRST AND SECOND  
YEAR STUDENTS ONLY.  
3 LECT HRS  
MS. FRONIES, MS. HUMEZ  
4 CREDITS

WOST 200 TWENTIETH CENTURY WOMEN WRITERS: A FEMINIST PERSPECTIVE  
A FEMINIST PERSPECTIVE  
AN INTERMEDIATE-LEVEL COURSE WHICH EXAMINES THE WAYS WOMEN  
WRITERS IN THIS CENTURY HAVE DEALT WITH SOME IMPORTANT THEMES OF  
CONTEMPORARY FEMINISM. THESE INCLUDE: THE SPECIAL DIFFICULTIES  
FACING THE WOMAN ARTIST; THE PROCESS OF FEMALE SOCIALIZATION AND ITS  
IMPACT ON MOTHER-DAUGHTER RELATIONSHIPS; FEMALE ADOLESCENCE,  
LESBIANISM, THE NEED FOR MAKING THE LIVES OF ORDINARY WOMEN A  
SUBJECT FOR STUDY AND A SOURCE OF ARTISTIC CREATION;  
AND RECOVERY OF WOMEN'S COLLECTIVE PAST. NOVELS, SHORT STORIES,  
SOME ANALYTICAL ESSAYS AND AUTOBIOGRAPHIES WILL BE USED.

3 LECT HRS  
STAFF  
3 CREDITS

- WOST 280 INTERMEDIATE SPECIAL TOPICS  
SELECTED TOPICS IN WOMEN'S STUDIES AT THE INTERMEDIATE LEVEL.  
3 LECT HRS  
STAFF
- WOST 300 FEMINIST THOUGHT  
AN ADVANCED COURSE DESIGNED FOR WOMEN'S STUDIES CONCENTRATORS AND FOR SOCIAL SCIENCE MAJORS. IT IS A SURVEY OF A PARTICULAR BODY OF WESTERN POLITICAL THOUGHT. TOPICS INCLUDE BRITISH FEMINISM, MARXIA VIEWS ON THE 'WOMAN QUESTION', SOCIALIST THEORIES ABOUT WOMEN, AMERICAN SUFFRAGISM, AND CONTEMPORARY WRITINGS OF WITCHELL, FIRESTONE, DEFAUVRIER, AND OTHERS.  
3 LECT HRS  
STAFF
- WOST 350 WOMEN AND IMPERIALISM  
AN UPPER LEVEL COURSE FOCUSING ON THE IMPACT OF COLONIALISM AND IMPERIALISM ON WOMEN'S LIVES IN SELECTED THIRD WORLD COUNTRIES AND IN THE UNITED STATES. TOPICS EXAMINED WILL INCLUDE CHANGING WORK AND FAMILY ROLES OF WOMEN IN ASIAN COUNTRIES AND PUERTO RICO; THE WOMAN'S ROLE IN ECONOMIC DEVELOPMENT; THE FOOD CRISIS AND POPULATION CONTROL; WOMEN'S PARTICIPATION IN NATIONAL LIBERATION STRUGGLES AND SOCIALIST CONSTRUCTION IN ALGERIA, VIETNAM, AND CUBA; FEMINIST VALUES, MILITARISM, AND THE PEACE MOVEMENT IN THE UNITED STATES.  
3 LECT HRS  
STAFF
- WOST 400 RESEARCH AND METHODS IN WOMEN'S STUDIES  
A SEMINAR TO INTRODUCE STUDENTS TO A VARIETY OF RESEARCH METHODS IN VARIOUS DISCIPLINES IN ORDER TO DEVELOP AN INTERDISCIPLINARY APPROACH TO SELECTED TOPICS IN WOMEN'S STUDIES. INSTRUCTION AND STUDENTS WILL CONSIDER NEW SOURCES OF MATERIAL FOR RESEARCH ON WOMEN. COMPLETION OF A MAJOR PROJECT OR RESEARCH PAPER WILL BE REQUIRED. LIMITED TO 14 JUNIOR OR SENIOR STUDENTS.  
3 LECT HRS  
STAFF
- WOST 470 INDEPENDENT STUDY  
OPEN TO A LIMITED NUMBER OF STUDENTS EACH SEMESTER. A WRITTEN PROSPECTUS MUST BE FORMULATED WITH THE INSTRUCTOR.  
PREFQUISITE: PERMISSION OF INSTRUCTOR AND APPROVAL OF THE PROGRAM MRS BY ARRANGMENT  
3 LECT HRS  
STAFF
- WOST 480 ADVANCED SPECIAL TOPICS  
SELECTED TOPICS IN WOMEN'S STUDIES AT THE ADVANCED LEVEL. TAUGHT BY VISITING LECTURERS AND STAFF.  
PREFQUISITE: MOST 100 OR EQUIVALENT AND INSTRUCTOR'S PERMISSION OF INSTRUCTOR  
3 LECT HRS  
STAFF

## GRADUATE PROGRAM

### MASTERS DEGREE PROGRAMS

#### Masters Degree Requirements

1. Thirty graduate credits. Up to six credits of grade B or better may be transferred from other institutions with the consent of the department. Twenty-one of the 30 credits must be in the major field. If a thesis is offered, six credits must be earned in graduate courses; if a thesis is not offered, 12 credits must be earned in graduate courses. Not more than 10 credits is earned by means of a thesis. No credit is valid after six years unless an appeal to the Department is sustained.
2. The thesis and general examination are optional with the school or department, but if required, they shall be under the supervision of a committee recommended by the major department. The thesis committee will consist of members of the faculty at the discretion of the chairperson of the department, and should be appointed as soon as possible after the student's first graduate registration. As soon as the student arrives on campus, and prior to the appointment of a thesis committee, an advisor, or guidance committee, should be appointed for the student from the members of the faculty. Once the student has selected his thesis topic, the guidance committee may serve as the thesis committee, although these two committees are not necessarily the same.  
  
The thesis must be approved by the thesis committee, the department chairperson, the advisor, and those members of the faculty in the major department designated by the department chairperson to approve the thesis.  
  
The General Examination (not limited to the thesis topic) is conducted by an examining committee of at least three members of the faculty. The recommendation of a majority of the members of the examining committee shall be requisite to receiving the degree. If a student offers a thesis, problem courses shall be limited to six credits.
3. All foreign language requirements for the Masters Degree are optional with the department.
4. Course credits used by any student for fulfilling the requirements for a Masters degree may not be used by the student for fulfilling the requirements for any other Masters degree at this University.

#### THE BIOLOGY GRADUATE PROGRAM

Our program is designed with flexibility in order to satisfy the aspirations of those who wish rigorous training leading to a degree of Master of Science in Biology. A special emphasis is placed on training for those who wish to teach. Each student will be assigned to three-member advising committee which will consider his training and aspirations and, in consultation with him, establish an appropriate program of study. The program may vary widely with the needs of the student, and the decision of whether or not to require an original thesis

of Masters candidates will be made on an individual basis. The student who is to write a thesis may, with proper consultation, select a research advisor who will then become chairman of his advising committee. The advising committee will be responsible for insuring that the candidate for a degree fulfills all requirements of the department and graduate school.

Each graduate student will be assigned space and facilities in the college of the chairperson of his advising committee, but graduate instruction will be independent of the collegiate system, and courses in a student's program may be offered in any college. Those students who write an original research thesis will normally do research in the laboratory of the research advisor.

#### Admission Requirements

In addition to the University-wide requirements for admission to graduate school those admitted to the Graduate Program in Biology will have to meet the following requirements: (1) The candidate must submit the results of the verbal and quantitative portions of the Graduate Record Examination (2) The candidate must normally have a grade point average of 3.0 in all undergraduate science and mathematics courses.

#### Facilities Available in Biology

The facilities on the campus allow programs in most phases of Biology. There are research laboratories for faculty members and graduate students and teaching laboratories for graduate courses. The facilities include all of those normally found in modern laboratories in the Biological sciences.

The campus is located on Boston Harbor and therefore one type of marine environment is readily accessible to it. Much of our instruction will be built around the Harbor. We also have a field station on Nantucket Island, and through cooperative arrangement we have access to still other types of marine habitats. We will use the city and the harbor as a source of biological material and as a facility for Biological Studies. Through cooperation of the Waltham Field Station of the University, we have facilities for large plantings of botanical materials. There are a number of other institutions in the area with which we have informal arrangements so that some rather specialized facilities can be made available if they are needed.

#### Course of Study

All 600 level courses are open to both undergraduate and graduate students. See undergraduate listing for 600 levels.

Many of the courses will be taught as tutorials by teams of faculty members sometimes from different departments. Since some of the courses will vary greatly in context with the needs of the students and the desires of the faculty, some of the courses may be taken for credit more than once. The course will be offered only upon prior arrangement by the student or his advising committee. Permission of the instructor is required for enrollment in all courses, and it is understood that the student will have the background necessary to handle the subject at the graduate level. In many courses the student will be expected to study from the original research literature in the field.

|      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                    |             |
|------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| BIOL | 714 | ADVANCED CELL CHEMISTRY<br>THE METHODOLOGY OF CELL ANALYSIS, WITH EMPHASIS ON<br>MACROMOLECULES AND INTERMEDIARY METABOLITES.<br>PREREQUISITE: PERMISSION OF INSTRUCTOR<br>HRS. BY ARRANGEMENT<br>STAFF                                                                                                                                                                                                                            | 3-5 CREDITS |
| BIOL | 722 | CONCEPTS AND METHODS IN CYTOLOGY<br>THE STRUCTURAL BASIS OF CELLULAR AND SUBCELLULAR FUNCTIONS,<br>WITH PRACTICAL EXPERIENCE IN METHODS OF VISUALIZING CELLULAR<br>STRUCTURE.<br>PREREQUISITE: PERMISSION OF INSTRUCTOR<br>HRS BY ARRANGEMENT<br>STAFF                                                                                                                                                                             | 3-5 CREDITS |
| BIOL | 732 | ADVANCED EVOLUTION<br>AN INQUIRY INTO THE MODERN SYNTHETIC THEORY OF EVOLUTION<br>WITH EMPHASIS ON POPULATION GENETICS, ECOLOGICAL GENETICS,<br>EVOLUTION OF DOMINANCE, GENETIC HOMEOSTASIS, CANALIZATION<br>AND GENETIC THEORY OF POLYMORPHISM.<br>PREREQUISITE: PERMISSION OF INSTRUCTOR<br>HRS BY ARRANGEMENT<br>STAFF                                                                                                          | 3-5 CREDITS |
| BIOL | 742 | BEHAVIOR AND ECOLOGY OF SEABIRDS<br>ADAPTATIONS OF SEABIRDS TO THE MARINE ENVIRONMENT WITH<br>PARTICULAR REFERENCE TO BREEDING BIOLOGY AND FEEDING<br>STRATEGIES; OTHER TOPICS OF CURRENT INTEREST IN BEHAVIORAL<br>ECOLOGY. LECTURES OR LECTURE AND FIELD WORK.<br>PREREQUISITE: PERMISSION OF INSTRUCTOR<br>HRS BY ARRANGEMENT<br>STAFF                                                                                          | 3 CREDITS   |
| BIOL | 744 | POLLUTANTS IN MARINE FOOD CHAINS<br>EXAMINATION IN DEPTH OF THE ENTRY OF SELECTED POLLUTANTS INTO<br>THE OCEANS, THEIR MOVEMENTS, DISTRIBUTION, AND EFFECTS WITHIN<br>MARINE ORGANISMS. WHERE POSSIBLE, CASE STUDIES FROM NEW ENGLAND<br>WILL BE USED.<br>PREREQUISITE: ORGANIC CHEMISTRY. PHYSIOLOGY, ECOLOGY AND<br>PERMISSION OF INSTRUCTOR<br>HRS BY ARRANGEMENT<br>STAFF                                                      | 2-5 CREDITS |
| BIOL | 750 | SEMINAR IN BIOLOGY<br>A SEMINAR TO DEVELOP SKILLS IN LIBRARY RESEARCH AND ORAL PRESENTATION.<br>EACH STUDENT WILL HAVE A FACULTY ADVISOR WHO WILL SUPERVISE HIS<br>PREPARATION FOR THE SEMINARS. ALL GRADUATE STUDENTS MUST TAKE AT<br>LEAST ONE SEMESTER OF THIS COURSE.<br>HRS BY ARRANGEMENT<br>STAFF                                                                                                                           | 2 CREDITS   |
| BIOL | 752 | EDUCATIONAL CONCEPTS IN BIOLOGY<br>ALTERNATE FORMS OF COURSE PROGRAMS AND DIFFERENT METHODS OF<br>TEACHING ARE CONSIDERED. GUEST SPEAKERS, PANEL DISCUSSIONS<br>AND AUDIO-VISUAL MATERIAL WILL BE PART OF THIS COURSE.<br>PREREQUISITE: PERMISSION OF INSTRUCTOR<br>HRS BY ARRANGEMENT<br>STAFF                                                                                                                                    | 1 CREDIT    |
| BIOL | 770 | CONCEPTS IN MODERN BIOLOGY<br>A FIELD OF BIOLOGY OF CURRENT INTEREST IS EXAMINED IN DETAIL.<br>PREREQUISITE: PERMISSION OF INSTRUCTOR<br>HRS BY ARRANGEMENT<br>STAFF                                                                                                                                                                                                                                                               | 2 CREDITS   |
| BIOL | 802 | PROJECTS IN TEACHING BIOLOGY<br>THE DEVISING OF A) SUITABLE DETAILED SYLLABI, B) LABORATORY<br>EXERCISES AND/OR C) AUDIO-VISUAL MATERIAL FOR TEACHING BIOLOGY<br>AT A SELECTED LEVEL OR THE TUTORING OF A GROUP OF STUDENTS<br>WITH SPECIAL KINDS OF PROBLEMS. STUDENTS MAY APPLY NO MORE<br>THAN A TOTAL OF 8 CREDITS IN THIS COURSE AND OTHER INDEPENDENT<br>STUDY AND RESEARCH COURSES - E.G. BIOLOGY 900 TOWARD THE MS DEGREE. | 2-5 CREDITS |

BIOL 702 PLANT PHYSIOLOGY  
CURRENT DEVELOPMENTS IN PLANT PHYSIOLOGY, MORPHOGENESIS AND  
BIOCHEMISTRY.

PREREQUISITE: PERMISSION OF INSTRUCTOR  
HRS. BY ARRANGEMENT  
STAFF

3-5 CREDITS

BIOL 712 ADVANCED CELL BIOLOGY

THE ANALYSIS OF GENE TRANSFER AND EXPRESSION AT THE CELLULAR  
LEVEL, INCLUDING THE NATURE OF METABOLIC SYSTEMS AND THE  
FACTORS GOVERNING THEIR REGULATION.

PREREQUISITE: PERMISSION OF INSTRUCTOR  
HRS BY ARRANGEMENT  
STAFF

3-5 CREDITS



PREREQUISITE: PERMISSION OF INSTRUCTOR  
HRS BY ARRANGEMENT  
STAFF

2-8 CREDITS

BIOL 812 ADVANCED FIELD BIOLOGY  
ORIGINAL RESEARCH PROJECTS WILL BE CARRIED OUT AT THE UNIVERSITY NANTUCKET FIELD STATION OR ELSEWHERE UNDER THE DIRECTION OF A SPECIFIC STAFF MEMBER. NANTUCKET PROJECTS WILL IN GENERAL BE CARRIED OUT DURING THE FIRST HALF OF THE SUMMER, BUT BY ARRANGEMENT, SOME WORK MAY BE ACCOMPLISHED AT OTHER TIMES DURING THE YEAR. THE PROJECT SHOULD BE PLANNED WELL IN ADVANCE OF THE TIME THAT THE FIELD WORK IS TO BE DONE. MAINLAND STUDENTS WHO LIVE AT THE FIELD STATION ARE RESPONSIBLE FOR MODERATE EXPENSES.  
PREREQUISITE: PREVIOUS EXPERIENCE IN FIELD BIOLOGY, SUBSTANTIAL BACKGROUND IN BIOLOGY AND RELATED SUBJECTS AND PERMISSION OF INSTRUCTOR.  
HRS BY ARRANGEMENT  
STAFF

1-6 CREDITS

BIOL 900 INDEPENDENT STUDY  
THE MASTER'S THESIS OR OTHER FORM OF COMPREHENSIVE REPORT MAY BE USED TO SATISFY REQUIREMENTS OF THE COURSE. NO MORE THAN A TOTAL OF 8 CREDITS OF THIS COURSE AND OTHER RESEARCH OR INDEPENDENT STUDY COURSES (E.G. BIOLOGY 802) MAY BE APPLIED TOWARD AN MS DEGREE.  
HRS BY ARRANGEMENT  
STAFF

2-8 CREDITS

# THE CHEMISTRY GRADUATE PROGRAM

## The Candidate is Required

1. To take six one semester courses of which one is to be in each of the areas of Dynamics, Structure, and Synthesis (3 credits per course)
2. To submit an original contribution (Thesis) in Chemistry or in a Chemistry related field (10 credits maximum)
3. To participate in a seminar program (1 credit per semester)

The elective courses can be selected from course offerings of other departments in the University subject to approval of the Graduate Committee of the Department.  
For graduation the candidate needs 30 graduate credits. Up to six credits of Grade B or better may be transferred from other institutions subject to the approval of the Graduate Committee of the Department.

CHEM 701 CHEMICAL DYNAMICS I  
DISCUSSIONS AND OUTSIDE READINGS IN THE AREAS OF CHEMICAL AND PHYSICAL EQUILIBRIA AND RATE PROCESSES. EMPHASIS ON THERMODYNAMICS FROM CLASSICAL AND STATISTICAL POINTS OF VIEW AND ON CHEMICAL REACTION MECHANISMS.

PREREQUISITE: ACCEPTANCE INTO THE GRADUATE CHEMISTRY PROGRAM, OR PERMISSION OF INSTRUCTOR.

HRS BY ARRANGEMENT  
STAFF

3 CREDITS

CHEM 702 CHEMICAL DYNAMICS II  
THREE OR FOUR SELECTED TOPICS OF INTEREST TO STUDENTS AND STAFF INVOLVED. TYPICAL SUBJECTS--MOLECULAR TRANSPORT PROCESSES AND THE KINETIC THEORY, PHOTOCHEMISTRY AND EXCITATION TRANSFER PROCESSES, SURFACE AND ELECTRODE RATE PROCESSES, PARTICLE COLLISION DYNAMICS AND REACTIVITY, IRREVERSIBLE THERMODYNAMICS, INTERACTION OF RADIATION AND MATTER, AND MOLECULAR STATE TRANSITIONS.

PREREQUISITE: ACCEPTANCE INTO THE GRADUATE CHEMISTRY PROGRAM, OR PERMISSION OF INSTRUCTOR.

HRS BY ARRANGEMENT  
STAFF

3 CREDITS

CHEM 711 CHEMICAL STRUCTURE I  
STRUCTURE DETERMINATION AND THEORY. THREE OR FOUR MOLECULES OF INTEREST TO THE STUDENTS AND FACULTY INVOLVED ARE CHOSEN. BASED

ON THESE MOLECULES, DISCUSSIONS, READINGS AND LABORATORY EXERCISES ATTEMPT TO SHOW HOW A CHEMIST DETERMINES EACH STRUCTURE AND HOW THE STRUCTURE IS UNDERSTOOD BY MODERN CHEMICAL THEORY.  
PREREQUISITE: ACCEPTANCE INTO THE GRADUATE CHEMISTRY PROGRAM, OR PERMISSION OF INSTRUCTOR.  
HRS BY ARRANGEMENT  
MR. LAUEER

3 CREDITS

CHEM 712 CHEMICAL STRUCTURE II  
IN TUTORIAL FORM, INDIVIDUAL STUDENTS STUDY ADVANCED STRUCTURE TOPICS WITH APPROPRIATE STAFF MEMBERS.  
PREREQUISITE: ACCEPTANCE INTO THE GRADUATE CHEMISTRY PROGRAM, OR PERMISSION OF INSTRUCTOR.  
HRS BY ARRANGEMENT  
STAFF

3 CREDITS

CHEM 721 CHEMICAL SYNTHESIS I  
THE TACTICS AND STRATEGY OF ACCOMPLISHING THE SYNTHESIS OF A CHEMICAL SUBSTANCE. EXAMPLES OF ORGANIC AND INORGANIC SYSTEMS.  
PREREQUISITE: ACCEPTANCE INTO THE GRADUATE CHEMISTRY PROGRAM, OR PERMISSION OF INSTRUCTOR.  
MR. WANG

3 CREDITS

CHEM 722 CHEMICAL SYNTHESIS II  
THE SYNTHESIS AND CHARACTERIZATION OF A NUMBER OF REPRESENTATIVE ORGANIC AND INORGANIC COMPOUNDS. THE GRADUATE CHEMISTRY PROGRAM, OR PERMISSION OF INSTRUCTOR.  
HRS BY ARRANGEMENT  
STAFF

3 CREDITS

CHEM 900 MASTER'S THESIS  
10 CREDITS MAXIMUM  
HRS BY ARRANGEMENT  
STAFF

1-10 CREDITS

CHEM 925 SEMINAR I  
PREREQUISITE: ACCEPTANCE INTO THE GRADUATE CHEMISTRY PROGRAM, OR PERMISSION OF INSTRUCTOR.  
HRS BY ARRANGEMENT  
STAFF

1 CREDIT

CHEM 926 SEMINAR II  
PREREQUISITE: ACCEPTANCE INTO THE GRADUATE CHEMISTRY PROGRAM, OR PERMISSION OF INSTRUCTOR.  
HRS BY ARRANGEMENT  
STAFF

1 CREDIT

## ENGLISH GRADUATE PROGRAM

The Master's of Arts Degree program in English is designed to serve three groups of students: Those who intend later to study for the Ph.D; those engaged in, or intending to pursue, careers in the Teaching of English at the secondary level or two year college level; and those who simply enjoy English and American Literature and wish to increase their understanding and enjoyment. Graduate enrollment is small. All graduate classes are offered during the late afternoon hours and are conducted as seminars, averaging from 6 to 10 students in each. The Degree candidate may also propose a semester's unit of independent study and/or writing which, if approved, may substitute for one required semester course. All graduate courses carry five credits.

## Degree Requirements

Requirements for the M.A. Degree in English include the satisfactory completion of six semester graduate level courses (30 credits). The graduate student may enroll in two advanced undergraduate courses in English or related fields at UNB and substitute these two courses for one of the six graduate courses required for the degree. A student wishing to transfer credits earned elsewhere may petition for evaluation of such credits. Up to six (6) transfer credits may be accepted. The degree candidate must earn at least a 3.0 (B) cumulative average in courses taken for graduate credit at UNB.

The graduate student must demonstrate a reading knowledge of one foreign language, ancient or modern. The reading knowledge may be demonstrated either by achieving a score of 575 or better on the ETC graduate school foreign language test (CSFET Administered from Princeton, N.J.) or by earning an A or B in an advanced undergraduate foreign literature course (400 level) at UMB in which works will be read in the original foreign language. The language requirement will also be fulfilled if the student has earned an A or B in such a course as an undergraduate at UMB, or (by petition) in a course at an equivalent level elsewhere. Students who plan a career limited to secondary school teaching, and who have no intention of later proceeding to the Ph.D., may petition for the waiver of the foreign language requirement. Waiver will also be granted to students whose command of an approved foreign language is so obvious as to make further examination of course requirement superfluous.

#### Admission to the Program

The committee will offer admission to the program to those applicants who present evidence of their ability to do graduate work with distinction. Such evidence will include: (1) a distinguished undergraduate transcript with, generally, at least an average of B or 3.0 in undergraduate English courses; (2) at least three encouraging and informed letters of recommendation from the applicant's undergraduate teachers (in English or related fields) or from others competent to comment on the applicant's academic qualifications; (3) a statement by the applicant (for 600 to 1200 words) of his major interests in the advanced student of English. While not required, the submission of graduate record examination aptitude scores (verbal and Mathematical) is highly recommended. For further information and for application forms, please write to the director of Graduate Studies in English, English Department, Univ. of Mass. Boston, Boston, Massachusetts 02125.

- ENGL 701 IMAGE IN AMERICA  
AN EXAMINATION OF THE WAY IN WHICH AMERICA HAS RESPONDED TO THE CONCEPT OF THE NEW WORLD AND THE IMAGE OF SELF AND NATION THAT HAS EVOLVED THROUGH THE 1860'S.  
STAFF 5 CREDITS
- ENGL 702 THE BLACK PRESENCE  
STUDY OF SELECTED LITERARY TEXTS OF THE LAST TWO-HUNDRED YEARS BY MAJOR AND MINOR AUTHORS WHO WROTE WITH A SPECIAL CONSCIOUSNESS OF THE SIGNIFICANCE OF BLACK PEOPLE IN AMERICAN SOCIETY.  
2 LECT HRS  
STAFF 5 CREDITS
- ENGL 703 REGIONAL LITERATURE  
THE SUBJECT OF THE COURSE IS THE REGIONAL CONSCIOUSNESS IN REPRESENTATIVE WORKS OF MODERN AMERICAN WRITERS OF THE SOUTH AND NEW ENGLAND. WE WILL EXPLORE THE ROLE THAT THE SENSE OF HISTORY (THE IMPINGEMENT OF THE PAST ON THE PRESENT), THE SENSE OF PLACE AND THE RESPONSE TO THE NATURAL WORLD PLAY IN THE WORK OF SOUTHERN AND NEW ENGLAND WRITERS.  
2 LECT HRS  
STAFF 5 CREDITS
- ENGL 704 HAWTHORNE AND JAMES  
A STUDY OF THE RELATIONSHIP BETWEEN THE FICTION OF HAWTHORNE AND JAMES, FOCUSING ON JAMES'S CRITICISM OF HAWTHORNE.  
2 LECT HRS  
MR. KATZ 5 CREDITS
- ENGL 705 CONTEMPORARY AMERICAN FICTION  
A STUDY OF THE SCOPE (TIMES AND TYPES) AND STRAINS (TYPES AND TENSIONS) IN THE POST WWII, POST MODERN AMERICAN NOVEL, WITH SPECIAL ATTENTION TO THE PERSISTENCE OF REALISM, THE INSISTENT PRESENCE OF SUICIDALISM, AND THE SOMETIME COMBINATION OF THE TWO.  
2 LECT HRS  
5 CREDITS
- ENGL 706 MODERN AMERICAN POETRY  
STUDIES IN THE POETRY AND SELECTED PROSE OF ROBERT FROST, E.A. ROBINSON, ROBERT LOWELL, AND ALAN Tate, WITH COMPLEMENTARY READINGS IN OTHER MODERN AMERICAN POETS  
2 LECT HRS  
MR. RYAN 5 CREDITS

- ENGL 707 COLONIAL AMERICAN LITERATURE  
STUDY OF LITERARY WORKS WRITTEN IN AMERICAN BEFORE THERE WAS A POLITICALLY INDEPENDENT AMERICAN NATION. NOT ONLY "REPRESENTATIVE" WORKS, BUT ALSO MAJOR TEXTS WITH A SIGNIFICANCE WHICH TRANSCENDS THE COLONIAL PERIOD.  
STAFF 5 CREDITS
- ENGL 720 CHAUCER  
A STUDY OF CHAUCER'S MAJOR WORK IN THE MIDDLE ENGLISH. SPECIAL ATTENTION TO SUCH CONSIDERATIONS AS CHAUCER'S POETIC DEVELOPMENT, HIS RELATIONS TO HIS SOURCES, MEDIEVAL LITERARY THEORY, AND THE SOCIAL, POLITICAL, AND RELIGIOUS BACKGROUNDS.  
2 LECT HRS  
MS. MCALPINE 5 CREDITS
- ENGL 721 ENGLISH LITERATURE, MEDIEVAL TO THE RENAISSANCE  
A SURVEY OF THE LITERATURE OF ENGLAND, EXCLUSIVE OF SHAKESPEAREAN DRAMA, FROM 1485 THROUGH 1625. SPECIAL ATTENTION WILL BE GIVEN TO HISTORICAL AND CULTURAL BACKGROUNDS, TO LINGUISTIC CHARACTERISTICS OF THE PERIOD, AND TO THE INTERRELATIONSHIPS BETWEEN THE COURSE HEADINGS AND SHAKESPEARE'S WORK.  
2 LECT HRS  
STAFF 5 CREDITS
- ENGL 722 TUDOR AND STUART DRAMA  
ELIZABETHAN AND JACOBÆAN DRAMA IS A REMARKABLY FERTILE AND REWARDING FIELD OF STUDY, EVEN WITHOUT SHAKESPEARE. READINGS OF ONE OR MORE PLAYS BY MARLOWE, DEKKER, JONSON, MARSTON, TOURNEUR, MIDDLETON, WEBSTER, CHAPMAN, BEAUMONT AND FLETCHER, AND FORD. THE APPROACH WILL BE SIMULTANEOUSLY LITERARY, THEATRICAL AND HISTORICAL.  
STAFF 5 CREDITS
- ENGL 731 ENGLISH LITERATURE, 1660-1750  
A STUDY OF THE WAYS MAN IS VIEWED BY THE MAJOR ENGLISH WRITERS FROM 1660-1750 AND AN EXAMINATION OF THE GENRES THROUGH WHICH THESE VIEWS WERE EXPRESSED. AUTHORS TO BE STUDIED INCLUDE DRYDEN, SWIFT, POPE, AND FIELDING.  
2 LECT HRS  
STAFF 5 CREDITS
- ENGL 732 ENGLISH LITERATURE, 1750-1830  
AN INQUIRY INTO THE NATURE AND CAUSE OF LITERARY CHANGE IN CULTURAL HISTORY IN ENGLISH LITERATURE FROM 1750-1830. AUTHORS TO BE STUDIED INCLUDE GIBSON, JOHNSON, GOLDSMITH, STERNE, BLAKE, CARLYLE, COLERIDGE, WORDSWORTH, BYRON, AND KEATS.  
2 LECT HRS  
STAFF 5 CREDITS
- ENGL 733 AUGUSTAN SATIRE  
STUDY OF THE MAJOR AUGUSTAN SATIRISTS - DRYDEN, SWIFT, AND POPE - WITH ATTENTION PAID TO THE WORKS OF ROCHESTER, ADDISON, GAY, AND FIELDING: CONSIDERATION OF THE CRITICAL QUESTIONS ARISING FROM THE STUDY OF SATIRE.  
2 LECT HRS  
MR. BLAIR 5 CREDITS
- ENGL 741 ROMANTIC LITERATURE  
THE SEMINAR WILL APPROACH THE UNITY OF ROMANTICISM THROUGH CONSIDERATION OF THREE IMPORTANT MODES OF BRITISH POETRY, FICTION AND CRITICISM IN THE PERIOD FROM C. 1790 TO C. 1830: THE VISIONARY (PRIMARILY BLAKE AND WORDSWORTH), THE PICTURESQUE (SCOTT AND BYRON), AND THE AESTHETIC (CHIFFLEY KEATS, WITH RELATED HEADINGS IN THE CRITICISM OF HAZLITT).



- ENGL 746 VICTORIAN LITERATURE AND AESTHETICISM AND SOCIALISM IN VICTORIAN LITERATURE. THE SUBJECT OF THE COURSE IS THE DEVELOPMENT OF TWO ISSUES IN THE WORK OF SOME MAJOR VICTORIAN WRITERS: THE MOVEMENT AWAY FROM THE CLASSICAL VIEW THAT ART IS NORMATIVE TO AN INCREASING ACCEPTANCE OF THE VIEW THAT ART IS AUTOFLECTIC; AND AN ACCOMPANYING MOVEMENT AWAY FROM A SPECIAL CONCERN WITH ART TO A CONCENTRATION ON SOCIAL REFORM.  
2 LECT HRS  
STAFF  
5 CREDITS
- ENGL 751 MODERN POETRY  
A STUDY OF THE MAJOR FIGURES AND CURRENTS IN MODERN BRITISH POETRY: HARDY, HOPKINS, ELIOT, AUDEN, LOWELL, GINSBERG.  
2 LECT HRS  
STAFF  
5 CREDITS
- ENGL 752 MODERN BRITISH FICTION - LAWRENCE AND WOOLF  
A COMPARATIVE STUDY OF THE MAJOR NOVELS OF D.H. LAWRENCE AND VIRGINIA WOOLF WITH PARTICULAR ATTENTION PAID TO THE TWO WRITERS'S CONCEPTION OF THE NATURE AND FUNCTION OF THE NOVEL AND TO THEIR RELATION TO THE LITERARY CONTEXTS OF THE PERIOD, 1914-1940.  
2 LECT HRS  
MR. LYONS  
5 CREDITS
- ENGL 761 STUDIES IN THE NOVEL  
A STUDY OF THE NATURE OF PROSE FICTION AND THE MAJOR KINDS OF NOVELS. A READING OF REPRESENTATIVE NOVELS IN ENGLISH AND AMERICAN LITERATURE. WITH THE PERMISSION OF THE DIRECTOR OF GRADUATE STUDIES IN ENGLISH, THIS COURSE MAY BE REPEATED FOR CREDIT.  
2 LECT HRS  
STAFF  
5 CREDITS
- ENGL 762 STUDIES IN DRAMA  
A STUDY OF ENGLISH AND AMERICAN DRAMA FROM AN AWARENESS OF ITS EUROPEAN CONTEXTS. PLAYS DISCUSSED WILL COME FROM THE MAJOR PERIODS OF WESTERN DRAMA AND WILL PROVIDE EXAMPLES OF THE MAJOR KINDS OF DRAMA.  
2 LECT HRS  
STAFF  
5 CREDITS
- ENGL 767 SHAKESPEARE  
SHAKESPEARE'S IDEA OF DRAMATIC ART AS REVEALED IN EXPLORATIONS OF ONE OF THE FOLLOWING TOPICS- THE PLAYS AND THEIR SOURCES, THEATRICAL SELF-CONSCIOUSNESS, SHAKESPEARE'S LANGUAGE OF THE THEATER. SEMINAR PAPERS WILL REQUIRE THE ACQUISITION OF FAMILIARITY WITH METHODS OF RESEARCH INTO THE SHAKESPEARE BIBLIOGRAPHY OF CRITICISM AND SCHOLARSHIP. BECAUSE THE SEMINAR PAPERS IN ADDITION WILL ATTEMPT TO DEFINE, SPECIAL ATTENTION WILL BE ACCORDED TO THE PROBLEMS OF FORMAL DEFINITION. THE SEMINAR WILL ASSUME THAT STUDENTS WILL HAVE HAD AT LEAST ONE COURSE IN SHAKESPEARE'S PLAYS, BUT STUDENTS WITH SPECIAL INTERESTS IN THE SEMINAR TOPICS ARE INVITED TO DISCUSS WITH THE INSTRUCTOR A WAIVER OF THIS ASSUMPTION.  
2 LECT HRS  
MR. BLUESTONE  
5 CREDITS
- ENGL 768 ARNOLD AND ELLIOT  
THE STUDY OF TWO IMPORTANT MEN OF LETTERS WHO BOTH REFLECTED AND CRITICIZED THE MAIN ARTISTIC AND INTELLECTUAL CURRENTS OF THEIR TIME. READINGS FROM THEIR POETRY, LITERARY CRITICISM, AND SOCIAL COMMENTARY AS WELL AS SELECTED WRITINGS CONTEMPORARY WITH EACH AUTHOR.  
5 CREDITS
- ENGL 771 FAULKNER  
A READING OF ALL THE MAJOR FICTION CENTERED IN YOKNAPATAWPHA COUNTY, WITH AN INTENSIVE STUDY OF CERTAIN TEXTS (SELECTED BY THE CLASS AFTER DISCUSSION AT THE FIRST MEETING). THE WORKS WILL NOT NECESSARILY BE READ IN CHRONOLOGICAL ORDER.  
STAFF  
5 CREDITS
- ENGL 776 STUDIES IN CRITICISM  
STUDY OF THE NATURE AND FUNCTION OF LITERATURE, THE TERMS AND METHODS OF ANALYSIS AND EVALUATION OF LITERATURE, AND THE VARIOUS APPROACHES POSSIBLE IN THE CRITICISM OF LITERATURE.  
2 LECT HRS  
MR. MARKS  
STAFF  
5 CREDITS
- ENGL 777 TEACHING OF LITERATURE  
THEORIES AND PRACTICE OF THE TEACHING OF LITERATURE, CONSIDERED IN THE CONTEXT OF CURRENT MODELS OF THE LIBERAL ARTS COLLEGE AND OF CURRENT ISSUES IN HUMANITIES CURRICULA.  
2 LECT HRS  
STAFF  
5 CREDITS
- ENGL 786 LITERATURE AND SOCIETY -19TH CENTURY ENGLAND-  
A STUDY OF LITERATURE WITH SPECIAL REFERENCE TO ITS SOCIAL AND HISTORICAL CIRCUMSTANCES AND OF THE THEORETICAL QUESTIONS RAISED BY SUCH A PERSPECTIVE. AUTHORS TO BE STUDIED INCLUDE AUDEN, COBBETT, GASKELL, DICKENS, ENGELS, CHARLOTTE BRONTE, AND LAWRENCE.  
2 LECT HRS  
MR. WEBB  
5 CREDITS
- ENGL 791 LITERATURE AND COMPOSITION  
THE COURSE WILL OFFER OPPORTUNITIES TO IDENTIFY AND DEFINE THOSE ACTS OF MIND INVOLVED IN COMPOSING AND TO CARRY OUT EXPERIMENTS DESIGNED TO REVEAL THE NATURE OF SYMBOLOGIC TRANSFORMATION AS THE FUNDAMENTAL OPERATION IN PERCEPTION AND CONCEPT FORMATION AS WELL AS IN THE CREATION OF WORKS OF IMAGINATIVE LITERATURE.  
2 LECT HRS  
STAFF  
5 CREDITS
- ENGL 792 INTRODUCTION TO LINGUISTICS  
THE COURSE WILL FIRST RAISE LARGE QUESTIONS BEHIND THE STUDY OF LINGUISTICS: WHAT IS THE RELATIONSHIP BETWEEN LANGUAGE AND THOUGHT? TO WHAT EXTENT DO WORDS CREATE REALITY? THEN, THE COURSE WILL SURVEY THE APPLICATION OF LINGUISTICS TO THE STUDY OF LITERATURE, THE ANALYSIS AND TEACHING OF SYNTAX AND GRAMMAR, AND THE FIELDS OF PSYCHOLOGY, SOCIOLOGY, AND BIOLOGY.  
STAFF  
5 CREDITS
- ENGL 800 INDEPENDENT STUDY  
A COMPREHENSIVE STUDY OF A PARTICULAR AREA OF LITERATURE, A PARTICULAR AUTHOR, ETC. CONSULTATION WITH THE DIRECTOR OF GRADUATE STUDIES IS MANDATORY. APPLICATIONS/OUTLINES OF STUDY MUST BE SUBMITTED AT THE END OF THE SEMESTER PREVIOUS TO THE STUDY. APPROVAL BY GRADUATE COMMITTEE.  
STAFF  
5 CREDITS

#### HISTORY GRADUATE PROGRAM

The program is of special interest to teachers of History and Social Studies, since it provides for the student who wishes to take courses not only in history but in other disciplines, and because our department is anxious to encourage better teaching of history in schools and colleges. We hope to enroll students who already have some teaching experience.

#### Requirements

In the present full-time program, 24 hours credit of graduate study including four upper level undergraduate courses taken for graduate credit, one colloquium and one research seminar are required. Two out of the four undergraduate courses may be taken, with the agreement of the committee for graduate studies in history, in disciplines other than history. Every student is expected to complete a 30 to 50 page research paper in the research seminar.



All students are required to demonstrate a reading knowledge of one foreign language by taking an examination administered by the department of History.

#### Courses

Apart from the graduate colloquium in the first semester, there are, at present, no special graduate courses offered, but students are encouraged to choose their faculty advisor early and to begin planning their graduate thesis in co-ordination with other courses.

The faculties of the two departments of History have more than thirty members; offering a wide range of specializations in American, European, African, Asian History as well as in Social, Economic, Political and Intellectual History.

#### MATHEMATICS GRADUATE PROGRAM

##### Academic Requirements

At least 18 semester credit hours in undergraduate Mathematics beyond the content of differential and integral calculus are normally required of each candidate entering the Master's Program. A one year course in Modern Algebra and a one year course in Advanced Calculus would be desirable.

To earn a Master's Degree in Mathematics, a student must:

1. Pass 10 courses, at least 6 of which must be in courses numbered 700 or above, and which must include the courses 711 (Modern Algebra I), 721 (Complex Variables I), 723 (Real Variables I), and 725 (General Topology) or their equivalent. No more than 3 of the 10 courses counted toward the Master's Degree may be taken outside the department, and they must be graduate courses and 2 must be math-related.
2. Pass the Master's Written Qualifying Exam. This exam consists of two parts each of which lasts two hours, one part covering algebra and topology, and the other, analysis. Knowledge of the material through the level of 711, 721, 723, and 725 should be sufficient to enable the student to pass the exam.

While the student ordinarily works out his program in consultation with his advisor, the ultimate responsibility rests with the student. A Master's candidate who has not completed the requirements for the Master's Degree at the end of his second year will not be permitted to enroll further in the department.

|      |     |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |
|------|-----|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| MATH | 711 | INTRODUCTION TO MODERN ALGEBRA I            | FIRST SEMESTER OF A TWO SEMESTER COURSE. TOPICS TO BE SELECTED FROM GROUPS, RINGS, ALGEBRAS, FIELDS, MODULES, LINEAR TRANSFORMATIONS, MATRICES, TENSOR PRODUCTS, HOMOLOGICAL ALGEBRA.<br>PREREQUISITE: MATH 360 OR MATH 450 OR EQUIVALENT<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                                | 3 CREDITS |
| MATH | 712 | INTRODUCTION TO MODERN ALGEBRA II           | SECOND SEMESTER OF A TWO SEMESTER COURSE. TOPICS TO BE SELECTED FROM GROUPS, RINGS, ALGEBRAS, FIELDS, MODULES, LINEAR TRANSFORMATIONS, MATRICES, TENSOR PRODUCTS, HOMOLOGICAL ALGEBRA.<br>PREREQUISITE: MATH 711 OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                             | 3 CREDITS |
| MATH | 721 | THEORY OF FUNCTIONS OF A COMPLEX VARIABLE I | FIRST SEMESTER OF A TWO SEMESTER COURSE. TOPICS TO BE SELECTED FROM LINEAR TRANSFORMATIONS OF A COMPLEX VARIABLE, POWER SERIES AND ELEMENTARY FUNCTIONS, HOLOMORPHIC FUNCTIONS AND CAUCHY'S THEOREM, THEORY OF RESIDUES, ISOLATED SINGULARITIES, CONFORMAL MAPPINGS, ENTIRE AND MEROMORPHIC FUNCTIONS AND THEIR REPRESENTATIONS BY MEANS OF PRODUCTS AND PARTIAL FRACTIONS, ELLIPTIC FUNCTIONS, ANALYTIC CONTINUATION AND RIEMANN SURFACES, ALGEBRAIC FUNCTIONS.<br>PREREQUISITE: MATH 450 OR EQUIVALENT<br>3 LECT HRS<br>STAFF | 3 CREDITS |

|      |     |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |
|------|-----|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| MATH | 722 | THEORY OF FUNCTIONS OF A COMPLEX VARIABLE II | SECOND SEMESTER OF A TWO SEMESTER COURSE. TOPICS TO BE SELECTED FROM LINEAR TRANSFORMATIONS OF A COMPLEX VARIABLE, POWER SERIES AND ELEMENTARY FUNCTIONS, HOLOMORPHIC FUNCTIONS AND CAUCHY'S THEOREM, THEORY OF RESIDUES, ISOLATED SINGULARITIES, CONFORMAL MAPPINGS, ENTIRE AND MEROMORPHIC FUNCTIONS AND THEIR REPRESENTATIONS BY MEANS OF PRODUCTS AND PARTIAL FRACTIONS, ELLIPTIC FUNCTIONS, ANALYTIC CONTINUATION AND RIEMANN SURFACES, ALGEBRAIC FUNCTIONS.<br>PREREQUISITE: MATH 721 OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF | 3 CREDITS |
| MATH | 723 | THEORY OF FUNCTIONS OF A REAL VARIABLE I     | FIRST SEMESTER OF A TWO SEMESTER COURSE. TOPICS TO BE SELECTED FROM THE REAL NUMBER SYSTEM, LEBESGUE MEASURE AND THE LEBESGUE INTEGRAL, DIFFERENTIATION, CLASSICAL HANACH SPACES, GENERAL MEASURE AND INTEGRATION THEORY.<br>PREREQUISITE: MATH 450 OR EQUIVALENT<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                                       | 3 CREDITS |
| MATH | 724 | THEORY OF FUNCTIONS OF A REAL VARIABLE II    | SECOND SEMESTER OF A TWO SEMESTER COURSE. TOPICS TO BE SELECTED FROM THE REAL NUMBER SYSTEM, LEBESGUE MEASURE AND THE LEBESGUE INTEGRAL, DIFFERENTIATION, CLASSICAL HANACH SPACES, GENERAL MEASURE AND INTEGRATION THEORY.<br>PREREQUISITE: MATH 723 OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                                        | 3 CREDITS |
| MATH | 725 | TOPOLOGY I                                   | FIRST SEMESTER OF A TWO SEMESTER COURSE. TOPICS TO BE SELECTED FROM TOPOLOGICAL SPACE, CLASSIFICATION, SEPARATION PROPERTIES, CARTESIAN PRODUCTS, MAPPING AND CONTINUITY, CONNECTEDNESS, GENERAL CONVERGENCE, COMPACTNESS, FUNCTION SPACES, INTRODUCTION TO HOMOLOGY THEORY, ALGEBRAIC TOPOLOGY.<br>3 LECT HRS<br>STAFF                                                                                                                                                                                                                        | 3 CREDITS |
| MATH | 726 | TOPOLOGY II                                  | SECOND SEMESTER OF A TWO SEMESTER COURSE. TOPICS TO BE SELECTED FROM TOPOLOGICAL SPACE, CLASSIFICATION, SEPARATION PROPERTIES, CARTESIAN PRODUCTS, MAPPING AND CONTINUITY, CONNECTEDNESS, GENERAL CONVERGENCE, COMPACTNESS, FUNCTION SPACES, INTRODUCTION TO HOMOLOGY THEORY, ALGEBRAIC TOPOLOGY.<br>PREREQUISITE: MATH 725 OR PERMISSION OF INSTRUCTOR<br>3 LECT HRS<br>STAFF                                                                                                                                                                 | 3 CREDITS |
| MATH | 727 | DIFFERENTIABLE MANIFOLDS I                   | FIRST SEMESTER OF A TWO SEMESTER COURSE. TOPICS TO BE SELECTED FROM DIFFERENTIABLE MANIFOLDS, TANGENT SPACES, TANGENT BUNDLES, FLOWS AND VECTOR FIELDS, LIE DERIVATIVES, DIFFERENTIAL FORMS, GENERALIZATIONS OF LIE AND SURFACE INTEGRALS, DIVERGENCE THEOREM & STOKES' THEOREM, RIEMANNIAN MANIFOLDS, RIEMANN SURFACES, RELATIONSHIPS TO VECTOR ANALYSIS AND TO DIFFERENTIAL GEOMETRY.<br>3 LECT HRS<br>STAFF                                                                                                                                 | 3 CREDITS |
| MATH | 728 | DIFFERENTIABLE MANIFOLDS II                  | SECOND SEMESTER OF A TWO SEMESTER COURSE. TOPICS TO BE SELECTED FROM DIFFERENTIABLE MANIFOLDS, TANGENT SPACES, TANGENT BUNDLES, FLOWS AND VECTOR FIELDS, LIE DERIVATIVES, DIFFERENTIAL FORMS, GENERALIZATIONS OF LIE AND SURFACE INTEGRALS, DIVERGENCE THEOREM & STOKES' THEOREM, RIEMANNIAN MANIFOLDS, RIEMANN SURFACES, RELATIONSHIPS TO VECTOR ANALYSIS AND TO DIFFERENTIAL GEOMETRY.<br>3 LECT HRS<br>STAFF                                                                                                                                | 3 CREDITS |

MATH 729 STOCHASTIC PROCESSES I  
 PROBABILITY SPACES, MEASURES, RANDOM VARIABLES, VARIOUS MODES OF  
 CONVERGENCE, LAWS OF LARGE NUMBERS AND OF THE ITERATED LOGARITHM,  
 CENTRAL LIMIT THEOREM, CONDITIONING, MARTINGALES.  
 3 LECT HRS 3 CREDITS  
 STAFF  
 --NOT OFFERED EVERY YEAR--

MATH 730 STOCHASTIC PROCESS II  
 PROCESSES WITH INDEPENDENT INCREMENTS, MARKOV CHAINS, STATIONARY  
 PROCESSES, CONTINUOUS PARAMETER MARKOV CHAINS, DIFFUSION PROCESSES,  
 SAMPLE PATHS, SEPARABILITY, SEMIGROUPS, BOUNDARIES  
 PREREQUISITE: MATH 729 OR PERMISSION OF INSTRUCTOR  
 3 LECT HRS 3 CREDITS  
 STAFF  
 --NOT OFFERED EVERY YEAR--

MATH 731 PARTIAL DIFFERENTIAL EQUATIONS I  
 HAMILTON-JACOBI THEORY FOR EQUATIONS OF FIRST ORDER, DISTRIBUTIONS,  
 FOURIER INTEGRALS OF DISTRIBUTIONS, SOBOLEV SPACES OF DISTRIBUTIONS.  
 3 LECT HRS 3 CREDITS  
 STAFF  
 --NOT OFFERED EVERY YEAR--

MATH 732 PARTIAL DIFFERENTIAL EQUATIONS II  
 ELLIPTIC EQUATIONS, HARDY'S INEQUALITY, SMOOTHNESS OF SOLUTIONS  
 SOLUTIONS OF THE DIRICHLET PROBLEM, HYPERBOLIC EQUATIONS, THE CAUCHY  
 PROBLEM,  
 PREREQUISITE: MATH 731 OR PERMISSION OF INSTRUCTOR  
 3 LECT HRS 3 CREDITS  
 STAFF  
 --NOT OFFERED EVERY YEAR--

# NOTES



## NOTES

## NOTES

# NOTES

11

5-2

















